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Committee Reports
approved by the Washington
Conference of District Foresters
held March 17-April 9, 1930

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COMMITTEE REPORTS

Approved by the Washington Conference
of District Foresters

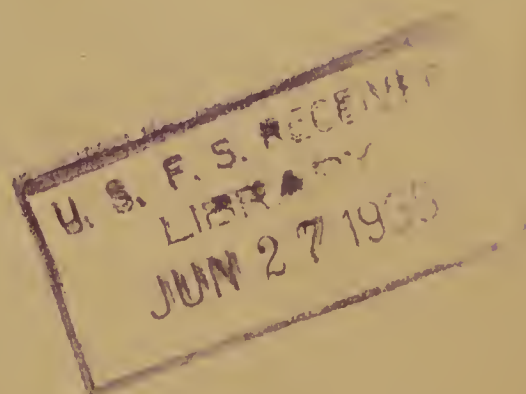
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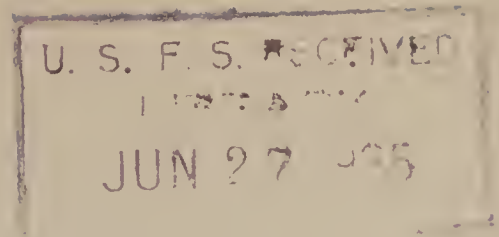
COMMENTS BY THE FORESTER



CONFERENCE HELD AT WASHINGTON, D. C.
FROM MARCH 17, TO APRIL 9, 1930

(OGDEN-6-20-30-850)





FOREWORD

The report of the Washington conference of District Foresters has been printed in sufficient quantities for distribution to each Supervisor. Comments, some of them quite brief, have been made on each of the recommendations and are included in the report.

In my opinion, as stated more fully in the "comments" on each of the Committee reports, the meeting was exceedingly fruitful in matters of policy and in other ways. Some steps have already been taken, and many more will be needed, to see that these policies do not become just so many more printed words as is frequently the case with resolutions enthusiastically adopted at meetings. I am, therefore, asking each officer to read this material, with pencil in hand and an open-end job list nearby, to the end that appropriate action, within stated periods, may be obtained on the recommendations.

R. Y. STUART,
Forester.



Washington
February 20, 1930

F
Supervision
District Foresters Meeting
District Forester,
DEAR SIR:

I enclose the program of the District Foresters' meeting which will convene in Washington on March 17. You will notice that it has been prepared to develop primarily the financial and business aspects of our work, with particular reference to use of funds. Three District Foresters have expressed the opinion that the subjects covered by the program are of such difficulty and importance that they should be given priority in the time and work of the meeting. This plan will be followed. We shall not, however, confine the conference exclusively to these subjects but cover other important Service policies and practices.

The general plan of the meeting will be as follows:

We will convene for the first general session at 10 a. m., March 17, in the Forester's room, when the purpose of the meeting and what we hope

to accomplish will be outlined. After any general discussion which seems appropriate we will break up and the various committees will start work. We will arrange tables in some rooms we have rented in a nearby building and the various committees can make their headquarters at these tables or elsewhere as may seem desirable.

The job of each committee will be first to identify the situations needing consideration within the field assigned to it. Significant and helpful facts should be assembled and digested. Conclusions and recommendations will be formulated and passed upon by the full group. It should be borne in mind that the outline of each subject in the attached program is merely suggestive. Each chairman will be expected to take up any angle of his subject which he considers important.

Each chairman will be expected to ascertain the views of all Districts, including those not represented on his committee. In addition, it will be desirable to arrange for each District Forester to participate with committees other than his own as their subjects are developed. I shall ask Mr. Rutledge to call the chairmen of committees together from time to time as may be necessary to correlate the work of the different committees so that there may be a maximum of participation by District Foresters in the work of each committee with a minimum of interference with the work for which each committee chairman is responsible; also to arrange for assignment of subjects not included in the enclosed program, to committees which may finish their programmed work ahead of others.

As final committee reports are developed the whole group will be called together to give them consideration. From time to time as committee chairmen desire the consideration of the whole group on preliminary developments of a subject, the whole group will be called together for this purpose. From time to time when the whole group has been called together I shall want also to arrange for Messrs. Albright, MacDonald, Redington, O'Malley, and others to appear before the meeting and get an interchange of view.

If there is advance work which committee chairmen would like to have done in Washington let us know and we will do the best we can to get such material ready.

Very truly yours,

R. Y. STUART

Forester.

PROGRAM AND INDEX

IMPROVEMENTS

Kelley, Chairman; Stahl, Merritt, Deering, Hoar

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RANGER DISTRICT ADMINISTRATION

Show, Chairman; Stockdale, Woods, Pitchlynn, Waha, Winkler, Scott

(See headings 9 and 10 for revised topics and indexing)

1. Should differences between Regions and Forests in conditions, objectives and standards of quality, quantity, perfection, intensity methods and practice be taken account of in making allotments which are or may be used for Ranger district administration?

2. If so, what methods are there of taking account of such differences and reflecting them in allotments? Which methods should be favored?

3. What methods are there for taking account of differences in the portion of the load of Ranger district administration which is carried by District Rangers personally? For example, work which is done by District Rangers in one place is done by Supervisors or Supervisors' office staff men or by project men or specialists from the District office elsewhere. How far can the Service go in giving such outside help to a District Ranger without affecting the desirability of the Ranger's job and his feeling of responsibility? Varying proportions of Ranger district administration are also carried by Assistant Rangers, or Guards. What methods should be favored for dealing with these variations in help given District Rangers and arriving at correlated allotment needs, including needs for Ranger district work which should be met by employment of Guards or labor employed as required by the work to be done?

4. How should use of funds for Ranger training positions be handled? How should the required number of Ranger training positions be determined and should enough 1½-man (or thereabouts) Ranger districts be organized to provide real jobs as Assistant District Rangers for men in training?

5. What methods can be suggested for use of District Forester and Forester in measuring the load of Ranger district administration by Forests and Regions currently in ways which will be most useful in making allotments?

6. (In cooperation with committee on studies, etc.) What are the most important facts and opinions regarding studies, development work, etc., by District Rangers? What principles can be used to distinguish between work of this character which it is desirable

and undesirable to have done by District Rangers?

7. Will studies and development work automatically be given the preference over less important routine work in Ranger district administration, or are steps to that end necessary and if so what steps should be taken?

8. How can District Foresters and the Forester best get at the correlation of time and funds available for studies and development work? For example, how can desirable development work on one Forest be weighed against the need for fire guards on other Forests where protection is not satisfactory and what principles can be laid down to guide the making of financial adjustments in such cases?

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FIRE CONTROL

Kotok, Chairman; Brundage, Stabler, Stockdale, Calkins, Price, Shields

(See headings 14 to 24 for revised topics and index)

1. What are we after in fire control and what expression of our objective or objectives will be most useful in making allotments for fire control by Forests and Regions?

2. What weight should be given to the degree that districts have developed and demonstrated the proper methods of obtaining the above objectives?

3. What principles should govern the allotment of funds for fire control between Forests and Regions? What uses should be made of available experience and information? What new information should be collected to guide in the making of such allotments and how should it be used?

4. What available or needed information is required to guide decisions as to allocation of funds between prevention and suppression, and how should available or needed information be used? Is it possible yet to lay out workable programs for thoroughly cleaning up specific incendiary or carelessness situations and if so what do such programs call for in the way of allotments?

5. A certain proportion of our large fires is due to absence of sufficient prevention effort and expenditures on the part of industrial or other concerns. In some instances we have clear authority to force adequate prevention effort and expenditures by such concerns. In some instances we have little or no direct authority but as responsible managers of National Forests we can initiate movements which will force such concerns to take adequate precautions. Dealing with such fires is not primarily a matter of service allotments for guards, etc. It is primarily a matter of alertness and effective prevention effort on the part of service executives. How can losses from such causes be segregated in a practical way when fire losses are being considered as indicating need for allotments?

6. Likewise, what methods should be used to distinguish between fire losses due to lack of money and losses due to lack of management?

7. What methods are recommended for use of District Foresters and the Forester in correlating allotments for fire control with allotments and expenditures for other purposes? For example, how can demands for money for fire guards be weighed against demands for money for overhead or administrative guards or employment of fire guards before and after the fire season on improvement work?---

8. What methods can be employed for measuring the chance a given Forest or Region has for developing fire cooperation both in the form of payment of full protection costs by private owners inside and by individuals and organizations available for prevention, presuppression and suppression? What measures can be employed for measuring the extent to which a Forest or Region has realized on its chance to develop cooperation? How can these considerations be used to modify allotments and expenditures for fire control? For example, if one Forest or Region employs full-time fire guards to cope with fire danger which in another Forest or Region would be handled with cooperators, allotments should in some way recognize the difference in local policy. Variations in use of cooperation are seldom as obvious as this, but may easily be as important although more difficult to evaluate. How can such things be gotten at in the most satisfactory way?.....

9. Balance between equipment and personnel. How can the relative urgency of expenditures for personnel or fire equipment be determined at a given time and what methods of checking or review can be used to make sure that expenditures for fire personnel and equipment actually are in right relation to each other in a given Forest or Region?

10. (In cooperation with committee on inspection). Is practice in prevention, presuppression and suppression inspection generally satisfactory? Is follow-up satisfactory? Can principles or methods be set up which will define the best ways of making post mortem analyses of fires and following up such analyses? What are the possible benefits to be obtained from this form of inspection? What are its weaknesses and the dangers to which it is subject? On big fires do district office men function too little as inspectors and too much in charge of crews- Considering the whole subject of fire inspection, what can be identified as the most promising features or trends? The most important deficiencies?.....

11. (In cooperation with committee on training) What place should be given to training in determining allotments for fire control? What allotment principles are needed to effectuate workable and balanced programs of fire training? What chance is there that some fresh or much more vigorous effort applied to fire training might result in a profitable decrease of human failures or in a profitable increase of sensitiveness to unused or little used opportunities for attaining mastery of fire?

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12. (In cooperation with committee on studies, etc.) What methods should be employed to guide, stimulate, and control creative work in fire mechanics, prevention methods, organization, executive management of fire control, etc., and what principles are needed in determining what amounts should be invested in such creative or experimental work?	
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STUDIES, DEVELOPMENT WORK (EXCLUSIVE OF IMPROVEMENTS), EXPERIMENTAL WORK, TIMBER STAND IMPROVEMENT; EXTENSION WORK (INCLUDING COOPERATIVE FIRE AND PLANTING); DEMONSTRATION FORESTS, PLANTING, RECONNAISSANCE, MANAGEMENT PLANS, TIMBER SALES.

Kircher, Chairman; Glen Smith, R. M. Evans, Woods, Kuhns, Thompson
(See headings 14 to 21 for revised topics and indexing)

1. For each class of development work there are needed principles, starting points, guides, policies, criteria which will serve to give each activity its proper place in relation to recurrent work and all other development activities under various existing and expected sets of circumstances. There is need to define allotment and executive practices which will convert approved policy into action. If possible, some guides as to priority of different development jobs

or studies need to be set up to the end that available time and money will be devoted to the most fruitful lines; but the training value of different forms of development work and studies needs to be carefully evaluated. -----

2. Is there satisfactory correlation in the amount of time and money available in various Forests and Regions for studies and development work? If not, how can the facts be gotten at and what should be done about them from the allotment standpoint? -----

3. Is there a tendency for high priority studies and development work to get crowded out by non-essential or low priority routine? If so, what can be done about it from the executive and allotment standpoint? -----

4. Peaking, as the recurrent or urgent duties of most Forest officers do during a few summer months, there is theoretically an enormous potential resource available for studies and development work during non-peak periods. To what extent is this potential resource utilized, what can be done to make better use of it, and what is needed from the executive and allotment standpoints to promote the effective use of potential resources of time in non-peak periods?

5. What can be done to search out the more promising leads for invention and experimental work in such things as road, trail, and firebreak building machinery and construction methods, machinery and methods for constructing fire lines or fire proofing roads and fire breaks, tank truck equipment, logging equipment and methods, and similar things where the cost of experimental work is a serious consideration? Under what circumstances should promising leads be developed by the Forest Service and when by private concerns or other agencies? What policies should be laid down to guide, stimulate and keep in balance such work as the Service should undertake. Are there any recommendations as to development of radio equipment and getting such equipment into use? What cost studies based on the present cost system could executive officers use to advantage? -----

6. To what extent should the cooperative fire appropriation be used to cover Clarke-McNary fire work carried on by District personnel including District Foresters? -----

7. What planting should be done by Rangers and what does this call for from the allotment standpoint? -----

8. The reconnaissance appropriation has come to cover only part of the timber reconnaissance work done. What are the most useful policies to set up to meet this situation? -----

9. How should management plan work be reflected in allotments? -----

10. Timber sales. What policy should be followed in making sales which require additional personnel when additional funds are not available? -----

11. Will there be instances in future in which a District or Forest requests additional funds for timber sales while at the same time making expenditures for overhead, travel, etc., which other

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Districts or Forests are not able to make? If so, what should be done about such instances from the allotment standpoint?	
12. How can advance needs for new timber sale personnel be ascertained and presented so that additional funds will always be available when additional personnel is required?	
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LANDS, ACQUISITION; RECREATION; TRAVEL ALLOTMENTS PURCHASE OF SUPPLIES AND EQUIPMENT

Tinker, Chairman; Buck, Yarnell

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6. What problems are there in connection with correlation and control of allotments and expenditures for travel and what	

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TRAINING

Peck, Chairman; Keplinger, Price, Pitchlynn, Calkins

(See headings 4 to 14 for revised topics and indexing)

1. In what ways do training needs bear on allotment questions? Training in the Service should obviously not be relied upon in lieu of competent executive management; it should not undertake training which can be done more appropriately by other institutions; nor should it neglect responsibilities and opportunities which belong to the Service alone. What are the chief avenues through which desired training is or may be accomplished and what bearing has each on allotment practice?

2. What questions of correlation between Forest and Regional expenditures and allotments for training require consideration and what should be done about them?.....

3. What is the job of the Service with respect to specific training needs? What does a defensible training program call for in the way of financial and appropriation planning and current allotments? How can the Service as a whole and individual Regions develop training programs which avoid both overdoing of training and neglecting of practicable and profitable training efforts?.....

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INSPECTION

Pooler, Chairman; Kircher, Waha, Parkinson, Scott

(See headings 8 to 14 for revised topics and indexing)

1. To what extent and regarding what activities are inspection and the follow up of inspection satisfactory?
2. Where are the weaknesses and what are the reasons and cures for such weaknesses? What can be done to improve the correlation of ideas among inspectors working from the District Forester's office and from Washington?
3. How much pure inspection should a Supervisor require or, in other words, how much District office overhead should be carried for inspection functions?
4. To what extent are Supervisors trained in inspection and to what extent is their inspection inspected? How can inspection and follow up of inspection by Supervisors be most effectively checked and directed by the District Forester?
5. Considering that ample measures have been taken to protect National Forest receipts in Supervisors' and District offices, can not greater protection be secured on ranger districts through inspection?
6. Does field action keep reasonably well abreast of well known as well as of new and approved practices? What part need inspection take in this respect?
7. It is accepted policy that promotions should be tied to actual field conditions and accomplishments. What methods, if any, are needed to have this policy followed uniformly?
8. Training through inspection
9. Morale as affected by inspection
10. Correlation of and through inspection
11. Methods of inspectors
12. Amount, frequency and record of inspection and inspection control
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REPORT OF IMPROVEMENT COMMITTEE

General Statement:

The Committee interprets its function as that of a temporary staff of the Forester appointed to recommend to him the most equitable means of apportioning funds appropriated for forest improvements, including FRD money. In approaching its assignment, and in working upon it, the Committee has been guided in its thinking and recommendations by its belief that it is the obligation of the Forester to use all means at his disposal to bring about a balanced program of protection, development, and utilization improvements throughout the entire Service. Development and utilization projects within certain limits must obviously be taken care of currently. However, in the opinion of the Committee, development and utilization projects should necessarily take a subordinate position in a priority rating until fire control needs are met.

Protection needs are not met as long as the attainment of the acceptable area burned objective is defeated or hampered by lack of necessary improvements. Very evidently this is the case today in Districts 1, 5, 6, 7, and 9. (Refer to Chart). In allotting funds for protection improvements, this program ought to be so balanced as to enable the Forester to secure the maximum reduction in fire loss for the Service as a whole.

The Committee also has been guided in making its recommendations by the principle that it is the obligation of the Forester's District representatives to prepare their respective statements of needs so that the Forester may most easily and accurately arrive at the best possible understanding of the total and comparative needs of the several Districts.

Coordination. The Committee finds that in five of its assigned subjects the need for better coordinated allotments and use of funds between Districts is implied. In a similar number, the suggestion is directly made. Summed up, in ten of the fourteen subjects of its program the Forester has indicated to the Committee his recognition of a need for a more real and fruitful program of coordination to enable him to make the best balanced progress with available funds. Accordingly, coordination is made a key subject of the Committee's Report.

The Committee strongly supports the Forester in this view. It advocates better coordination between Districts, not only as to the intensity of the projected improvement programs as a whole, but also as to their range of classes and type of improvement in each class required to meet a given purpose. It is also needed to coordinate the rate of progress in the several Districts towards the attainment of the completion of the improvement systems.

Penalty Allotments: To attempt to effect correlation by making short allotments after needs are identified because District officials failed to use funds, so as to enable the Forester to secure what in his judgment is the proper use of money is viewed with strong disfavor by the Committee.

This alternate for direct action has crept into allotment thinking now and then, chiefly because the theory of District independency has inhibited the Forester from taking the obviously more productive method of advancing his rate of progress in a balanced way Service-wide.

The penalty allotment scheme is looked upon with disfavor by the Committee chiefly because its employment actually results in defeating progress. This result falls not more upon the District than upon the Forester himself, inasmuch as in the final analysis upon him devolves the responsibility for prolonging the task of completion of projects vital in protecting the National Forests against fire.

Integrity of Allotments: The Committee has also been guided in its thinking by the principle that inasmuch as all new monies made available by Congress for 1931, except \$9000-- appropriated for administrative improvements--were appropriated upon the showing by the Forester of shortage of existing appropriations for fire control no reductions can be made below 1930 allotments for fire control in the total allotted in 1931 for that activity from "old money" in either the Improvement or Roads and Trails appropriation.

Provided, however, that nothing in the above shall prevent the Forester from making provision for urgent maintenance needs.

While such restriction as just indicated is inescapable at this time, in the light of the fact that the Service strongly adheres to the principles that decentralization is a desirable objective in organization and in recognition of the fact that maximum financial flexibility within each National Forest District is a desirable condition in the interest of good management, it should be the aim of the Forester to place only such restrictions on the use of funds allotted to the Districts as are found absolutely necessary in order that he may be assured that monies appropriated are so used to enable him to make the best progress Service-wide within the obligation of the Service to the appropriating body.

Coming now to the first topic:

Topic 1. Various methods used heretofore in allocating improvement appropriations.

Allotments: A few introductory statements in regard to the general subject of allotments appear to be in order. A review of the situation indicates that the Forester has not been equipped with adequate data to enable him to formulate a fully satisfactory basis for the distribution of money to the various Districts. Neither is it possible to prescribe a system of substantial or enduring worth now.

The first step recommended in order to arrive at a clearer understanding of the relative needs of the Service is to push the Forester's transportation study as rapidly as possible. This is already in partial use. Where applied, it gives promise of a return that merits Service-wide application. Not only does it promise to give information about needs for protection roads, but also whether roads or trails would be the most economical, all things considered. Furthermore, it indicates the standard of road that is most appropriate for a given purpose.

It promises to provide a means of determining the system of transportation facilities and fire guards which at the least annual expense will result in the protection objective expressed in terms of a specified travel time as part of the determined hour control. It points out where available man power fails to meet plus or minus the requirement of a given fire danger situation. Introducing as it does the element of man power, the use

of man power inevitably comes up. For instance, will it be employed for sitting tight in an obscure place, or should it be used to render protection service in defined locations. This question interjected opens the way for determination of the needed investment in lookout structures both secondary and primary. Likewise, the need for other forms of shelter facilities is introduced. Location of man power defines very largely the requirements for communication. Summed up, then, we find that the application of the Forester's transportation study somewhat modified to suit local conditions promises to give a look into the entire field of protection needs and to afford a better grasp than we now have on the entire improvement program.

Until all fire areas have been subjected to the study, nothing much better than the existing methods of allocating road funds and improvement funds appears to be practicable. It is recommended, therefore, that within four years next ensuing January 1, 1930, the Forester should require that the study should be applied to all Forests where the District Forester may deem the study justifiable. Necssarily, an hour control set-up by types must precede the study.

In respect to administrative improvement requirements, much the same element of doubt prevails as to actual needs as has been described as pertaining to the protective improvement situation. This doubt will continue until the job loads of all Districts have been analyzed and the eventual Ranger organization has been decided upon. Reorganization of Ranger district boundaries will undoubtedly have a very decided influence upon the location of headquarters developments. Headquarters developments constitute the major items in the administrative improvment inventory. In order that dependable figures in this category of improvements may be made available it is recommended by the Committee that the job load analysis be pushed with all possible dispatch, and that revised statements of needs based upon the showing of the analysis be submitted as soon as possible.

Pending the completion of the transportation study and the job load analysis, improvement needs will remain more or less a matter of conjecture; but notwithstanding the figures now compiled with some modification will represent the best available, and must be taken into account for the allotment of funds. Specific recommendations covering proposed changes and proposed revisions in systems of making allotments will be covered in subsequent discussions.

Comment:

Approved. I am anxious to have the Ranger district analyses and the transportation studies completed as rapidly as they may be without sacrificing their quality. As the report states, the transportation studies should be tied in closely with a determination of hour control needs by cover types. The simple method of doing this as described by Show and Kotok in their forthcoming bulletin may well be used for this purpose. In addition, detection needs of each locality and detection possibilities of each fire guard must, of course, be brought into the picture at some stage. The report does not overlook this, nor do the conference members need to be reminded of the prevention and managerial phases of fire control. For this reason the statement in the report that the transportation studies "look into the entire field

of protection needs” does not state just what was intended. The “look” as stated, is into a big and a very important field but not into the “entire” one. I trust that the objective—completion of the transportation plans as called for by December 31, 1933, or 1934, as stated later in this report, will be attained.

Other notes on this first topic are included below in my “General Comment” on the report as a whole.

R. Y. S.

Topic 2. What weight should be given to contributed time?

Topic 3. What method can be found for determining whether actual contributions of time to improvement work are correlated as between Forests and Regions?

Topic 4. How can differences in contributed time due to local differences in policy be distinguished from differences due to size of available force, climatic conditions, demands of other work, and similar factors?

CONTRIBUTIONS FROM SALARY AND EXPENSE ALLOTMENTS

F. Y. 1927					F. Y. 1928			
District	Average to A.&P., C.&M. 1925 - 27	Per Cent allotment increased	pct. S.&E. Allot-ment	To R.&T. for M. & C.	To A.&P. Imp. for M. & C.	Per Cent allotment increased	pct. S.&E. Allot-ment	To R.&T. for M. & C.
1	76,054	75	6.3pct.	54,157	88,769	94	7.3pct.	57,760
2	38,726	112	5.2pct.	32,810	58,490	106	7.7pct.	23,479
3	37,229	84	5.7pct.	12,403	41,408	88	6.3pct.	13,133
4	57,590	103	6.9pct.	31,402	71,121	124	8.5pct.	30,175
5	53,745	93	5.9pct.	23,469	56,740	92	6.0pct.	32,875
6	51,581	51	5.1pct.	45,119	60,908	61	5.8pct.	53,306
7	15,173	43	3.8pct.	10,951	22,590	68	5.2pct.	9,116
8	1,701	50	—	2,924	3,116	92	2.7pct.	2,512
9	—	—	—	—	—	—	—	—
Total	331,799	68	—	213,243	403,144	75	—	222,356

F. Y. 1929					F. Y. 1930			
District	To A.&P. Imp. for M.&C.	Per Cent allotment increased	pct. S.&E. Allot-ment	To R.&T. for M.&C.	To A.&P. Imp. (Proposed) for M.&C.	Per Cent allotment increased	pct. S.&E. Allot-ment	To R.&T. Average 3 yrs. 1927 - 29
1	108,000	120	8.3pct.	54,552	107,601	98	8.1pct.	55,490
2	39,390	93	5.3pct.	17,395	11,971	54	1.7pct.	24,561
3	39,371	75	5.9pct.	13,429	28,108	66	4.1pct.	12,988
4	80,990	187	9.6pct.	26,594	49,774	93	5.7pct.	29,390
5	62,200	108	6.0pct.	42,005	34,732	51	3.0pct.	32,783
6	57,920	52	5.2pct.	57,506	39,442	35	3.4pct.	51,977
7	36,751	61	8.3pct.	10,193	12,349	21	2.5pct.	10,087
8	2,396	30	2.1pct.	1,963	2,015	27	1.4pct.	2,466
9	8,364	51	—	3,092	5,003	60	5.0pct.	3,000
Total	436,068	73	—	226,737	290,995	48	—	222,742

F. Y. 1931

District	To A.&P. Imp. (Proposed) for M.&C.
1	118,000
2	10,600
3	26,200*
4	38,700†
5	37,931
6	34,437
7	19,740
8	750
9	9,711

Total 296,069

* Does not include Range Improvement
† Includes Range Improvement

CONTRIBUTIONS TO A. & P. IMPROVEMENTS AND R. & T. COMBINED

District	F. Y. 1925-27	F. Y. 1928	pct. S.&E. Allotment	F. Y. 1929	pct. S.&E. Allotment	F. Y. 1930	pct. S.&E. Allotment
1	130,211	146,529	11.9pct.	162,550	12.5pct.	163,091	12.3pct.
2	71,536	81,969	10.9pct.	56,785	7.6pct.	36,532	5.0pct.
3	49,632	54,541	8.3pct.	52,800	7.9pct.	41,096	5.9pct.
4	88,992	101,296	12.1pct.	105,584	12.6pct.	79,164	8.8pct.
5	77,214	89,615	9.5pct.	104,205	9.9pct.	67,515	5.9pct.
6	96,700	114,214	10.9pct.	115,426	10.5pct.	91,419	8.0pct.
7	26,124	31,706	7.3pct.	46,944	10.6pct.	22,436	4.5pct.
8	4,625	5,630	4.9pct.	4,359	3.7pct.	4,481	3.2pct.
9	—	—	—	11,456	—	8,003	7.8pct.

While the question has not been specifically asked, the Committee believes that contributed time should be taken into account in the making of improvement allotments. No other decision is possible if the potentialities of contributing GE resources to improvements is taken into consideration on a business basis.

The Committee also finds that the Forester has well warranted grounds for the inclusion of topics 3 and 4 in the program. A study of the amounts involved in the tabulation are self-convincing of this fact.

In the limited time available for study of the records and of the practices by the several Districts, the Committee finds no exact method immediately available for determining whether contributions of time to improvement work are what they should be or that contributions are correlated as between Forests and Districts. To build up information through which proper contributions of time may be determined, the following procedure is suggested:

A. Complete the Ranger and Overhead analyses for all Forests, and accept them as sufficient correlation of the time which each Ranger or member of the Overhead may contribute to improvements.

B. Secure from the accounting system a record which will give the contributed time of staff, Rangers and Guards showing separately:

(1) Improvements and (2) Roads and Trails; distinguishing between protection improvements and administrative improvements, between labor time and supervision time, and between maintenance and construction.

C. Then compile for each Forest records of the time contributed to improvements separately by overhead, Rangers and Guards, distinguishing between administrative Guards, protection Guards and lookouts, over a period of five years, under the subdivisions of protective improvements and administrative improvements, including roads and trails. From that compilation establish the average contribution of each class of employees, in terms of days per man per month. The resultant figures will represent for each Forest separately, past practice in respect to contributions of time to protective and administrative improvements. These index figures, representing days per month contributed by each class of personnel, will permit comparisons of varying numbers of men over varying periods of employment on a single Forest. Correlation may then be approached administratively by questioning the local justifications for outstanding differences in practice. Since the time which may properly be contributed to improvements is largely determined by administrative judgment and skill as in sitting tight versus improvement work, it is not proposed to attempt correlation by any hard and fast rules, but rather by analysis, through inspection, of local prac-

tice, as indicated by the time records suggested above. During the five-year period the Forester may currently use the accumulated data.

To secure the full benefit of contributed time, plans must be made for improvement projects to which time can be contributed and the projects must be considered in making the plans of work of all employees concerned.

The Committee believes that differences in contributed time due to local differences in policy can best be minimized for the overhead and ranger positions by the completion of analyses which will presumably fix the time contributed in accordance with the necessities of each case. It would then seem unimportant whether differences in contributed time were based upon one reason or another, since the analyses will have taken all conditions into account as far as possible, and reached conclusions based upon the facts.

For the guard positions, the determination of average contributions as suggested in the answer to question 3 would provide a starting point from which to consider whether differences were due to variations in policy or to variations in essential conditions.

The Committee sees no method by which the causes of such differences can be accurately measured and believes that the only approach is through inspection and study of records.

Comment:

The recommendations in paragraphs B and C above have been called to the attention of Finance and Accounts. The possibility and practicality of the proposed scheme as it fits into the new accounting system will be determined by trial on selected Forests during the coming year. In the meantime each District Forester should arrange to obtain from each Forest officer and guard the desired information for the fiscal year 1931 by adding to the accounting activities now recognized such additional ones as may be needed. The principal difference in segregation will be of the supervision time from Labor time on improvements, by classes. Mr. Loving is asked to arrange for inter-District uniformity in the definition of activities and in the form in which this information is obtained and compiled.

While the above project is under way a study should be made to determine how much contributed time can ordinarily be devoted, for example, by a guard to the construction of a tower to be built at his point of duty, to a shelter, to an observatory, to a fence, etc. This may lead to fixing the amount of contributed time which may, on an average, be devoted to each class of improvements. It would also lead to greater inter-District uniformity. As a check on the averages to be determined from the accounting scheme above mentioned such an empirical figure may be just what is needed.

R. Y. S.

Maintenance:

Topic 5. What method can be used to determine whether standards of maintenance and maintenance expenditures are correlated? Consider minor roads and trails, range improvements, S. & F. P. improvements, and all others.

Topic 6. How can a method be developed for keeping maintenance

standards and expenditures in proper balance with new construction, particularly construction of fire improvements?

Detailed analysis of available figures on the amounts expended by the Districts in the maintenance of the various major classes of improvements shows some decided variations. (See chart). For example, in 1929, the telephone maintenance figures ran from a high of \$6.55 in one District to a low of \$4.36 a mile in another, a spread of 50%. Lookout houses had \$36.54 spent in their maintenance in one, with but \$3.78 in another, the higher figure being over nine times the lower. Four room dwellings varied from an average of \$54.16 in one District to \$26.82 in another, a variation of over 100%. Trail maintenance ran from a high of \$14 in one place to a \$2 average in another, the higher being seven times the lower. Road maintenance varied from a high of \$88 to a low of \$9 per mile. This is a spread of over nine to one.

Such tremendous ranges reflect certain obvious differences such as the cost of the material and labor used, in the size of the actual jobs themselves, in methods of reporting, in accuracies in segregating betterment from maintenance, and in the standards to which reasonably similar work is done in the different Districts.

The following suggestions are made to clear up the two last points above mentioned:

(a) A clear understanding and definition must be had in each region as to just what constitutes maintenance as distinguished from betterment or reconstruction. This will involve a somewhat new segregation in activity costs.

(b) A set up should be made by regions showing to what condition each major class of improvement should be kept up. Emphasis ought to be put on the fact that refinements above what is needed to realize the purposes for which the improvements are to be used should not be carried out nor should improvements that have outlived their official usefulness have maintenance effort put on them. They should be disposed of or abandoned. Such standards will also take into consideration local variations that may be justified because of peculiar local conditions.

(c) The keeping of such cost figures as will show clearly the actual costs of maintenance on each class of projects without any betterment or reconstruction included should be insisted upon. Such records over a period of several years will give a set of dependable unit maintenance cost figures.

(d) Inspection to see that the established standards are met and that the condition of the improvements bears a reasonable relation to the amount expended. Inter-District correlation of standards must be supplied by the Forester's office.

Until the fire improvement program is much nearer completion than it is at present, all funds that can be made available must be used to push the program for such work, particularly in units in which satisfactory protection has not been attained. It is accordingly recommended for the present that the amounts allotted for maintenance work be kept to the lowest practicable limit in all Districts until the objective above mentioned is approached. In determining the needs for maintenance, money for which should be allotted to the Districts from the regular improvements funds,

the following general standards are suggested:

- Keep all telephone systems up to the condition that will meet the correlated maintenance standards approved by the Forester.
- Keep all lookout structures and cabins in safe fire and weather-proof condition.
- Keep up headquarter improvement in weather and fire-proof condition on stable and safe foundations, with adequate sanitation upkeep. Also keep interior maintenance up to livable standards.
- Maintain all fences in reasonably stock-proof shape.
- Maintain domestic water improvements in sanitary and usable condition. Keep range watering places in a condition safe and usable by stock and satisfactorily conserve the water supply.
- Paint all structures as a *general practice* at 5-year intervals.
- Maintain roads built on satisfactory standards to the standards upon which constructed; old roads built by other agencies and forming parts of the system should be maintained to a standard which will provide adequately the service demanded of them.
- Maintain trails of whatsoever origin to a standard commensurate with the required service.

Comment:

Approved. Finance and Accounts is asked to arrange with the District Foresters such steps as may be needed to meet suggestions (a) and (c) above.

The instructions in the Telephone Handbook will be reconsidered in the light of the foregoing and will be revised where necessary. In the meantime the handbook instructions should remain in effect.

In view of the urgent construction needs maintenance certainly should not be overdone. I appreciate how difficult it is, however, to draw the line between just enough maintenance and so little that a general run down appearance results. That is where good administration will count.

R. Y. S.

Topic 7. How shall estimated needs for construction be used in allocating the Improvement appropriation for new construction?

As a guide to the Forester in the making of future allotments of regular improvement funds pending completion of the transportation study Ranger district analyses, it is recommended that a revised statement of complete improvement needs be prepared by forests and tabulated by forests in Washington, giving by classes of improvements the following information:

N. Existing	No. or miles	Estimated cost	Replacements		Additions to Buildings		Total	
			No. or miles	Estimated cost	No. or miles	Estimated cost	No. or miles	Estimated cost
			Needed now					

A. *Protection Improvements Needed*

1. Telephone lines to all regular fire protection personnel.
2. Additional telephone lines, extending to emergency guard locations or elsewhere for protection purposes.

3. Lookout houses, glass ribbed, for regular lookouts.
4. Shelters for emergency use.
5. Lookout towers, for regular lookouts.
6. Lookout towers for emergency use.
7. Cabins for protection guards.
8. Cabins for emergency guards.
9. Barns for protection guards.
10. Water improvements for protection guards.
11. Fences solely for protection purposes.
12. Other improvements solely for protection purposes.
13. Purchase of sites.

B. Fire Breaks

C. Administrative improvements at District Ranger headquarters

1. Dwellings, 4 rooms or more.
2. Dwellings, 3 rooms or less.
3. Barns.
4. Office buildings.
5. Other structures.
6. Fences.
7. Water development.
8. Pasture development.
9. Purchase of sites.

D. Administrative improvements, other

1. Cabins.
2. Barns.
3. Water development.
4. Telephone lines not included under A.
5. Fences
6. Other structures.

In allotting the regular improvement fund to Districts, the following plan is suggested: That provision be made first for maintenance up to the standard set for each District as correlated by the Forester.

That from the balance of the funds an arbitrary amount to be determined by the Forester be allotted for construction in District 8 and on new units.

That remaining funds be distributed for construction in such amounts as will result in carrying the protective improvement system forward to completion at at least twice the rate of other improvements.

For the purpose of the above computation the following will be regarded as protection improvements:

For Forests having fire losses within objective set:

Items A 1-3-5-7, and firebreaks needed for the protection of plantations and on the Wichita Forest.

For Forests having fire losses in excess of objective set:

Items A 1 to 9-11-12 and B (except firebreaks in southern California).

"Other Improvements" will include administrative improvement and all protective improvements not included above. It will not include range

improvements, sanitation and fire improvement, or roads and trails.

In computing allotments adjustments will be made for contribution of time and money from S & E to the classes of improvements in question as determined by methods suggested elsewhere in this report.

In computing allotments, it is expected, of course, that the Forester will vary from the suggested method as necessary to care for emergency or unusual situations, to provide a reasonable minimum fund for any district, or otherwise as may in his judgment be necessary.

The Committee has not attempted to formulate principles to govern the making of improvement allotments for F. Y. 1931, except as the above may be of assistance.

Comment:

Approved: (See also Topic 13).

R. Y. S.

Topic 8. Should estimates of needs be used as submitted by each District or should such estimates be correlated? What should be taken as the estimate of needs to be used in making allotments for 1931? How often shall new estimate of needs be compiled in future?

The estimates sent in must be correlated by the Forester in order to put the figures for all Districts on a reasonably comparable basis.

New estimates should be called for at 3-year intervals. Due recognition should be given by the Forester at each yearly allotment period to any urgent unanticipated need for funds that may have arisen in any District subsequent to the preparation of the program and not included therein.

Comment:

Approved.

R. Y. S.

Topic 9. If correlation of such estimates should be made what factors or points should be set up to keep in mind as guides or controls as the correlation is made? Consider separately needed improvements for fire control, sanitation and protection, administration, range improvements and roads and trails.

The following major points must be kept in mind:

(1) Whether the various Districts are following the same general policies with respect to the development of their improvement programs. Such matters as why one District should include large numbers of salt troughs under range improvements, when all of the other Districts apparently get those built by the permittees in connection with range management work will be ironed out.

(2) The District programs ought to be comparable in completeness to meet the needs in each, and the Forester ought to see that this is done.

(a) The requirements for fire control improvements and for protection roads and trails will be determined largely upon the showing of transportation studies when completed.

(b) The new administrative improvement needs will be decided upon from the Ranger District analyses, and in part by the transportation study, and the trend of transfer of headquarters from isolated locations to school and social centers.

(c) Range improvement requirements will depend upon factors

such as the necessity for the construction of facilities to promote the better control and distribution of stock on the ranges and to secure the proper utilization of the available forage resources; on facilities that promise a reduction in the cost of administration; and the relative effort put forth by the Districts to help to build up their plants under existing regulations.

- (d) S. & F. P. fund programs will take into account the number of people to be served and the relative importance of concentrating recreational use for fire prevention as well as the need for structures to safeguard public health, with priority given to needs in intensively used localities.

(3) Reasonable standardization of specification for types of structures should be set to meet similar needs in each District.

(4) The comparability of unit costs for similar types of structures must be established with recognition given legitimate variations due to local conditions.

Comment:

Approved. (See also the report of the "Lands" committee and my "General Comment" below.)

R. Y. S.

Topic 10. How should allotments be influenced by variation in cost of work due to local policy and preference? For example, if one Forest or Region spends more than others on protection roads and trails built to meet comparable requirements and under comparable difficulties of construction, what should be done about it in making allotments for such work? Or, if one Forest or Region meets a given need with less costly structures than erected elsewhere, what can be done to see that allotments are not thereby diverted to other Districts when the next statement of remaining improvement needs is compiled?

Variation in cost of improvement work to a certain extent is inevitable. The Committee finds, however, wide and unexplained variations in the cost of the same type of improvement in the various Districts. As an example, during the calendar year 1928, eight offices in District 1 cost on an average of \$656 each, while five in District 3 cost \$700 each, and a similar number in District 4 cost but \$304 each. In 1929, the cost of offices ran from a minimum of \$344 in District 2 to a maximum of \$902. In District 6, telephone lines had cost to December 1, 1928, on an average of about \$70 per mile, while in District 1, the cost had been \$82 per mile.

The cost of lookout houses ranged from \$360 in District 3 to \$839 in District 6. The spread of cost in the three fire Districts is as follows:

District 1	\$611
District 5	680
District 6	839

The latter is 36 % higher than District 1.

An analysis of these figures, of course, would reveal many controversial points. All discussed to their final end would indicate either basic weaknesses in the Service in accounting for monies on expended systems, differences in skill of planning, skill in the use of time, and lack of coor-

dination between standards in the several Districts for given classes of improvements.

Again, a legitimate spread of costs may exist as between Districts or for given Forests within the same District for projects of similar specifications due to higher costs of materials, expensive transportation, or variation in specifications due to well grounded differences in local conditions

The Committee finds necessity for better correlation Service-wide in costkeeping, planning for use of funds and time, and specifications to insure the construction of those classes of improvements in all Districts that are *just good enough* for the purpose to be served, *no more or no less*.

Such coordination should be effected not by the making of penalty changes in allotments, but by the Forester taking such direct action as may be just and necessary to accomplish the best net progress in the Service as a whole.

As to the cost aspects of the problem, it appears hopeful that the new cost accounting system when in full effect will accomplish the needed improvements in the cost records.

Comment:

Approved. (See the "General Comment" below.)

R. Y. S.

Topic 11. Since \$306,000 of the improvement increase for 1931 was secured specifically for fire improvements exclusive of roads and trails, this money must be allotted and used for that purpose only. How can a method be developed for deciding what base or estimate of need should be used in allocating the regular improvement appropriations?

The Committee has been handicapped from beginning to end in analyzing the improvement situation and in attempting to work out an acceptable plan for the distribution of the \$306,000 and for the regular improvement fund for that matter, because estimates on file are not prepared by Forests. Also it finds that estimates of total needs are exceeded in part by what is already on the ground. Other obvious discrepancies were also revealed.

In view of the foregoing, the Committee has tried several schemes and falls back on the weighted Fire Load Factor as the best indication of the relative urgency for additional improvements. This takes into account estimated needs and coordinates the distribution of these funds with the new man power and new facilities that will be needed to make best final use of the new S. E. fire control monies. Also it is directly related to certain obvious factors that contribute to large acreages burned on many of the critical Forests, namely, poor detection, which *calls for more lookout structures*, with their complement of telephone lines, shelters, etc.

Applying the table we have the subjoining table:

Distribution of		
\$306,000 Less \$16,000 (explained below)		
Net \$290,000		
Weighted Load		
Factor on Per-		
Districts	centage basis	Division of \$290,000
1	42.6*	\$123,540
3	.4	1,160
4	1.3	3,770
5	16.3	47,270
6	36.3	106,430
7	2.7	7,830
8		
9		

*Arrived at by multiplying Fire Urgency Load Factor of the Fire Committee by Cost to Complete and reducing the figure to a percentage basis.

District 8 has made no call upon these funds. To provide for District 9 and Fire Lines in District 2, \$16,000 has been set aside to be distributed as the merits of the respective situations here may be determined by the Forester.

Of course, the system used in working out this distribution is not 100 % attack proof. It has its weak points, but taken all in all its basis is sounder than hunch and its outcome does not appear far off. Subject to a maximum of 10 % reduction in any one District's figures shown in the preceding table as a basis for readjustment between Districts, the Committee recommends that this distribution shown be accepted as substantially right for 1931 allotment purposes. The plan at least should stand until the distribution of the regular allotment is worked out on an independent basis. The new statements of needs by Forests recommended as a requirement under Topic 7, will give much more dependable base data for future determination of allotments for fire control improvement.

Comment:

Approved, as noted below.

R. Y. S.

Topic 12. What guides, objectives, criteria and policies should be used in allocating the Forest Road Development fund, the increase in the Improvement fund for protection roads and trails, and the Sanitation and Fire Prevention and Range Improvement funds?

As indicated earlier in this report, a study of allotment and use of various improvement funds indicates lack of policies and practices consistent with our major problems to an extent which call for getting as early as possible upon a sounder basis of determining relative needs. It also indicates a necessity for use of funds more adequately related to the solution of the fire control problem. Reference Table A).

TABLE A

Total Road and Trail Needs by Groups of Forests and R & T Expenditures

Districts	Total Cost to Complete Protection Road System	Trail System	Total Expenditures for R&T for 3 yr. period	Three Year Exp. R&T per 1000 acres (fire area only)
CRITICAL FORESTS				
1	8,519,000	1,894,000	1,598,565	\$156
5	7,526,000	601,000	1,182,320	70
6	5,980,000	760,000	1,026,961	120
7	3,958,000	2,000	191,624	116
9	1,502,000		4,591	3
Total	27,485,000	3,257,000	4,004,061	
MARGINAL FORESTS				
1	1,096,000	642,000	383,728	74
2	8,000		7,966	29
3	789,000	115,000	298,019	107
4	1,455,000	216,000	461,001	63
5	607,000	4,000	72,294	33
6	6,477,000	498,000	1,161,427	96
7	1,611,000	38,000	297,959	174
9	488,000	40,000	158,257	80
Total	12,531,000	1,553,000	2,840,651	
ACCEPTABLE FORESTS				
				Gross Area
1	862,000	161,000	182,928	17
2	1,475,000	84,000	725,591	35
3	896,000	133,000	407,905	27
4	204,000	85,000	366,810	16
5	87,000	18,000	44,676	15
6	1,611,000	80,000	373,209	75
7	659,000	6,000	166,652	66
8		512,000	29,654	1
9	None			
Total	5,794,000	1,079,000	2,297,425	

A close study of this tabulation will reveal some points in regard to use of funds that merit attention.

As examples from other sources the committee finds that one District has spent to date \$76 per 1000 acres on its "acceptable group" and plans to spend \$344 where as another District where dangers are even greater there was spent \$64 per 1000 acres with an ultimate program of \$443. As another comparison one District has spent an average of \$94 per 1000 acres on marginal Forests with an ultimate program of \$562 for protection roads whereas its neighboring District has but \$72 expended with \$326 planned

for, while another has but \$58 on the ground on the marginal group with \$211 planned for. These differences suggest need for analyzing the road program and how use of money is planned for.

The Committee recommends under Topic 13 the new information that may be helpful in placing the cost data on a more workable and dependable basis.

The Committee also finds itself at a loss to deal with the Forest Development question. Because of the indefinite consideration involved, however, to place a program before the conference it is recommended that the following system be used beginning in 1932 and until the transportation studies data are available.

- (1) Finance maintenance on its merit.
- (2) Consider the need for utilization development and administration on such basis as local circumstances may warrant from year to year in the judgment of the Forester. The committee recommends that the Forester consider the advisability of setting apart a percentage of the F. D. appropriation for the construction of roads of this class, giving recognition to the fact that the proportion may vary from time to time depending upon the amount made available under G. E. for roads, and trails.
- (3) The remainder to be distributed to protection on a basis that will take an account in a balanced manner the protection needs on all National Forests.

Proceeding to the explanation of the system suggested for use in the distribution of the \$1,500,000 for protection roads and trails.

The following figures taken from the Districts' statements of "Miles Available" of roads on the ground including all mileage reported as used and their estimated remaining mileage to complete the F. D. system, show the existing transportation system and "planned for" in terms of miles per 1000 acres.

CRITICAL FORESTS		
District	Existing All Classes	Planned For F. D. Prot and all Exist- ing Roads
1	.15	.33
2		
3		
4		
5	.60	.87
6	.21	.39
7	.90	1.21
8		
9		

MARGINAL FORESTS

Districts	Col. 1 Existing All Classes	Col. 2 Planned for F. D. and All Existing Roads
1	.19	.25
2	.27	.44
3	.70	.88
4	.16	.19
5	.84	.95
6	.42	.60
7	1.47	1.94
8		
9		

In order to bring all Districts upon a common denominator as to additional needs based upon "where they are at" the column 2 figures are divided by the existing mileage factor or figures in column 1 of the preceding tabulation. The result is a figure representing an index to additional needs on a mileage basis. Following is the table:

INDEX FIGURES SHOWING RELATIONSHIPS BETWEEN EXISTING MILEAGE AND PLANNED FOR MILEAGE

	Critical Forests	Marginal Forests
D-1	22	13
D-2	x	16
D-3	x	13
D-4	x	12
D-5	14	11
D-6	19	14
D-7	13	13
D-8	x	
D-9	x	

These figures indicate for the critical forest a wide spread between District 1 and the other fire districts. On a mileage basis District 5 is 50 % further along than District 1 based upon existing plans whereas District 6 is about 30 % further along. This difference is made real when it is noted that on the Clearwater Forest about 24 miles of roads are now provided while on the Selway having a fire area of 1,765,000 acres but 71 miles are on the ground. The St. Joe with a fire area of 874,000 acres has but 51 miles of road.

Difference in planning for roads on critical and marginal forests in District Six and between critical forests in District Six and District Five even after roughly taking into account differences in elapsed time necessities, indicate variations in thought and use of funds that appear to the administrator as requiring study looking toward better coordination.

Returning now to the consideration of the preceding table: To weight the mileage indexes on basis of estimated cost to complete the development system is the next step. This interjects the cost differential or the final index which is used as the basis for making the distribution between districts. The final index takes into account in a comparable manner road needs on the marginal group set up as requiring special consideration for

roads and trails on the relative weight of 2:1 in favor of the mileage needed on the critical group.

Trail needs are weighted in the proportion that the cost to complete the trail system in Districts One and Six bears to the total cost to complete the road system. Trail needs as such in other Districts have not been taken into account in the determination of allotment of these funds inasmuch as the present F. R. D. allotment considered on a relative basis appears to take care of trail requirements elsewhere with reasonable adequacy. While this situation may provide for the Forester to carry out the objective of using all road funds during the Fiscal year 1931 in a manner that promises to return the greatest net benefits Service wide, it is not contended that the scheme unmodified will be applicable after better data upon which to picture needs is at hand.

Subjoining is the table showing the final index figure and its application to the distribution of the \$1,500,000.

TABLE SHOWING MILEAGE INDEX COORDINATED
BY COST FACTORS
CRITICAL FORESTS

	Mileage Index	Coordinated Index*
D-1	22	187
D-2		
D-3		
D-4		
D-5	14	105
D-6	19	113
D-7	13	51
D-8	x	
D-9	x	

*This is arrived at by multiplying the mileage index by the District's cost to complete their development system on the critical Forests.

RAISED MARGINAL FORESTS

	Mileage Index	Coordinated Index**
D-1	13	9
D-2		x
D-3	13	3
D-4	12	11
D-5	-	-
D-6	14	24
D-7	13	7
D-8		7
D-9		

**This is arrived at by multiplying the mileage index by the District's cost to complete their Development system on the marginal Forests concerned.

TABLE OF DISTRIBUTION.

	Combined Coordinated Index	Combined Coordinated Index Reduced to percentage	Indicated Allotment of Roads	Rec. Ad- justments & recommended allotments	Trails	Total
D-1	196	38.35	469,787	400,000	175,000	575,000
D-3	3	.59	7,191	20,000		20,000
D-4	11	2.13	26,092	45,000		45,000
D-5	105	20.55	251,737	300,000		300,000
D-6	138	27.00	330,070	330,000	100,000	430,000
D-7	58	11.35	139,037	80,000		80,000
D-9				50,000	275,000	50,000

The set up shown as is the case with other set ups has vulnerable points but all things considered it is the best system that the committee could devise. It has an appeal of soundness inasmuch as it takes into account transportation media on the ground and what is needed to complete the system and the relative cost.

The distribution looks about right weighted on the scale of relative inaccessibility taking into account also the fire load factors and the fire suppression costs that are known to mount on account of long distances removed from roads in District One. The only figure that appears to be out of line is that of District Seven as compared with District 4 and 3 when it is borne in mind that the distances in District Seven are relatively short and that the planned for road system is more intensive and expensive than can be justified on the basis of fire control requirements alone. While the Committee stands on the soundness of the showing of the distribution on the basis of relative needs of the current time D-7 excepted, it recognizes needs for certain adjustments for other reasons, namely to take care of District Nine for \$50,000, to take into consideration the amount of money that District One can use to good advantage and also the factor of total road monies at hand for 1931, as indicated below:

APPROXIMATE AMOUNT OF MONEY AVAILABLE FOR 1930-31

Districts	F. H. 1930	F. R. D.	1930-10%	Southern California	G. E. R&T New	Total
					175,000)	
1	578,050	771,581	x60,000	x	400,000)	1,984,631
2	509,150	229,764	90,000	x	—	828,914
3	317,050	247,001	51,000	x	10,000	625,051
4	718,523	248,771	66,000	x	27,000	1,060,294
5	770,647	473,616	142,000	50,000)		
				50,000)	300,000	1,786,263
6	963,355	698,480	x169,000	x	100,000)	2,261,835
					331,000)	
7	146,942	284,903	xx30,000	x	80,000	541,845
8	459,384	18,960	8,000	x	—	486,344
9	36,899	21,924	3,500	x	50,000	111,693
	4,500,000	2,995,000	619,500	100,000	1,473,000	9,686,870

x—This figure will be less in F. Y. 1931.

xx—This figure may be more in 1931.

	Total Funds Available	Total for F. D. Roads
D-6	2,261,835	1,298,480
D-1	1,984,631	1,406,581
D-5	1,786,263	1,015,616
D-4	1,060,294	341,771
D-2	828,914	319,764
D-3	625,051	308,001
D-7	541,845	394,903
D-8	486,344	26,960
D-9	111,693	75,424

Comment:

See the "General Comment" below.

R. Y. S.

Topic 12a. Range Improvement.

The allotment of the range improvement funds deals with few factors. These are altogether tangible. Needs therefore are readily determinable, and relative urgency should be easy to appraise; however it is the judgment of the committee that the time has come to take into account in a definite way absolute needs as well as relative urgency: Accordingly it presents the proposition that henceforth following the deduction of maintenance charges, and after taking into account the amount available to the Districts under Reg. 15 - 16 that the construction money be allotted on the basis of 60 % on statement of correlated needs and 40 % on basis of the relative urgency; to be determined by the Forester.

Comment:

Approved.

R. Y. S.

Topic 12b. Sanitation---Lands.

The same general principles are included in the sanitation situation. Factors are easily comprehended and merits of programs comparatively easily identified; moreover, the relative urgency of the respective situations is not difficult to appraise. Therefore, it is suggested that the present system of allotting funds is not failing far to meet substantially the needs of the various situations. However it is believed that better correlation would follow if not to exceed 60 % were allotted on the basis of proportionate cost to complete the system as correlated by the Forester taking into account only fireproofing projects (exclusive of fire places) toilets and garbage pits or garbage disposal and work needed to provide and purify water supply, and the remainder or 40 % on the basis of relative urgency as determined by the Forester.

Comment:

Approved.

R. Y. S.

Topic 13. Where additional data is desirable for use in making these allotments in future, what data should be collected, what checks should be made, and how should correlation be secured?

The subject of this topic already has been covered in large part at numerous points. Summing up all that has been said and proceeding to outline some new suggestions, the Committee wishes again to record the

fact that the Forester has been greatly handicapped as the Committee has been due to absence of essential data to enable him to arrive at a thorough comprehension of allotment needs. It suggests also that the Districts should be readily willing to set about the job of remedying the various deficiencies having an important bearing on the whole problem.

The following are summarized recommendations:

1. *General:*

- (a) Push the Forester's transportation study and the Ranger District analysis through to completion not later than December 31, 1934.

2. *Improvements:*

- (a) As a temporary substitute for the expected finding of the transportation study and Ranger District analysis, get from the Districts statement of improvement needs as described in Topic 7.
 - (1) Organize this material by Forests—group in the critical, marginal and acceptable classification.
 - (2) Show set-up for replacements, additions and new construction separately.
 - (3) Classify improvements by administration and protection.
- (b) Require more dependable cost data on maintenance insisting that replacement and betterment be shown separately.
- (c) Set up a new record of money spent for betterments and additions.
- (d) Carry into effect the recommendation for securing contributed time data and evaluate the value of contributed time in making allotments.

3. *Roads and Trails:*

- (a) The present road plans fail to reflect the relative economic and social importance of projects on which these factors deserve special consideration. The only remedy which the Committee can suggest is that the Forester call upon the Districts to investigate the situation looking to a classification of roads into such designations as will enable the Forester to reach proper conclusions under the intent of the preceding sentence. In classifying a road its designation should be governed by the principal purpose for which it is proposed for construction.

For the clean-cut dual purpose roads a scheme of double classification should be worked out.

For each such project, show separately cost for protection and for the other principal uses. Charge only as protection the estimated cost of a road to the minimum standard which will serve protection requirements and to others the additional cost of constructing up to whatever standard may be necessary to meet such other needs.

From the standpoint of protection the present road plans are far from comparable or complete. In some regions

apparently they provide only primary roads, while in others where the primary system has been constructed the plans call for a large mileage of secondary roads and motorways. Until reasonable progress has been made in building primary roads in all regions the existing road plans will not reflect the comparative urgency of needs of the several Districts for protection roads.

(b) Pending the completion of transportation studies, road plans for the Forests should be revised where revision is necessary to provide reasonably comparable estimates of protection needs. These points need to be included:

- (1) All existing roads, railroads or other transportation routes.
- (2) The mileage of all existing routes per M acres to be protected by forests shown separately for critical, marginal and acceptable.
- (3) Estimate cost of projects separately by the forest groupings outlined in (2) in such manner as the Forester may deem necessary to insure proper coordination.
- (4) In order to enable the Forester to check cost of roads by classes and to check the economy of the proposed protection road plan from a specification standpoint, in the opinion of the Committee he should also compile a list of projects and costs by duty or service classes, i. e., motorways light duty, ordinary duty, heavy duty or such substitute service classes as may later be listed in the minor road manual.
- (5) Compile the material to show clearly the cost of new projects and cost of reconstruction and betterment separately.
- (6) Require that maintenance work be confined to maintenance and that cost figures shall so show the cost thereof by classes of roads.
- (7) Require separate cost statements for betterment expenditures as the Forester may outline to insure coordination between District practices.

Based upon this information the Forester may establish roughly correlated estimates of the cost to complete *Basic* transportation systems and allot funds for roads in accordance with such correlated estimates, pending the completion of the transportation studies. This should also furnish a good basis for the distribution of the G. E. road and trail money.

Comment:

Plans are under way, as recommended by the District Foresters, to handle the subjects covered in Paragraphs 2, (a) to (d).

The recommendations as to roads and trails will also be carried out thru the revision of present maps and reports and the collecting of the additional required data.

R. Y. S.

Correlation

The correlating processes divides into these broad classes.

- (1) Coordination of planned setups.
- (2) Coordination of quantitative execution of the plan.
- (3) Coordination of qualitative execution of the plan.

"Two" has a bearing on "Three" but in the main "Two" has to do with balancing the program of expenditure to enable the Forester to make the best progress over the field as a whole irrespective of district lines. From that stand point alone this committee has approached its problem.

As a whole coordination can be best arrived at as the Committee views the problem, collecting and organizing in a usable way valuable root data. In addition the Forester must have a good working knowledge of the field situation. Then call into conference such District representatives as the Forester may designate to review and discuss plans, with the final judgment resting in the Forester and set up the correlated base data for each District. This let us call the "Plan". This takes care of "One".

As a quantitative execution: First the standards and specifications for given classes of work for given purposes must be correlated. The general approach to this phase of problem will be as for "One". Then considering the whole job, irrespective of District lines the Forester alone is in position to decide where the funds available ought to be spent to enable him to make the best progress over the whole field. This aspect of the matter was discussed fully in the opening section of the report.

Last the qualitative execution from the Forester's stand point can be arrived at best by field inspection supplement by cost data studies.

As a detail in the general approach to this problem, all agencies in the Forester's office working on common activities must square their views as to subjects inspected and discussed otherwise the Forester will receive conflicting reports. Conflicting views of inspectors expressed in the field tend to destroy the confidence of the field in the value of inspections made by the Foresters' staff.

As an immediate matter requiring attention is correlation between the suggested setup of funds in this report and the use of those funds on the ground if the report is approved by the Forester substantially as it is written. The Forester is urged to make such requirements, to be checked by inspection on the ground, as will insure the use of the fund where and for the purposes indicated in the report.

Comment: See below.

R. Y. S.

Topic 14. Assuming that all the money we might want for improvements were available, what, if any, principles of business economics or any other principles can be applied advantageously in determining maximum limits for expenditures for construction of improvements for a given Forest or Region for any given period?

The Committee views this subject as one in the field of fundamental economics of Forest land management by public agencies. Essentially, it is a research project of tremendous significance to any sound scheme of forest land financing and one which merits early attention by the Research

organization. The subject is considered to be beyond the purview of this Committee.

General Comment:

The reports of the Improvement and Fire Committees have made a major contribution to the thought and working equipment of the Service. Beginning with the Mather Field conference we have grown accustomed to thinking of the fire problem in terms of "critical" and "marginal" National Forest Districts. These reports open the way to a more definite thinking of critical and marginal National Forests.

This has had a very evident influence on the action of the Forester in making allotments. The influence should also be carried into more definite and conclusive inspection of fire control activities by my office.

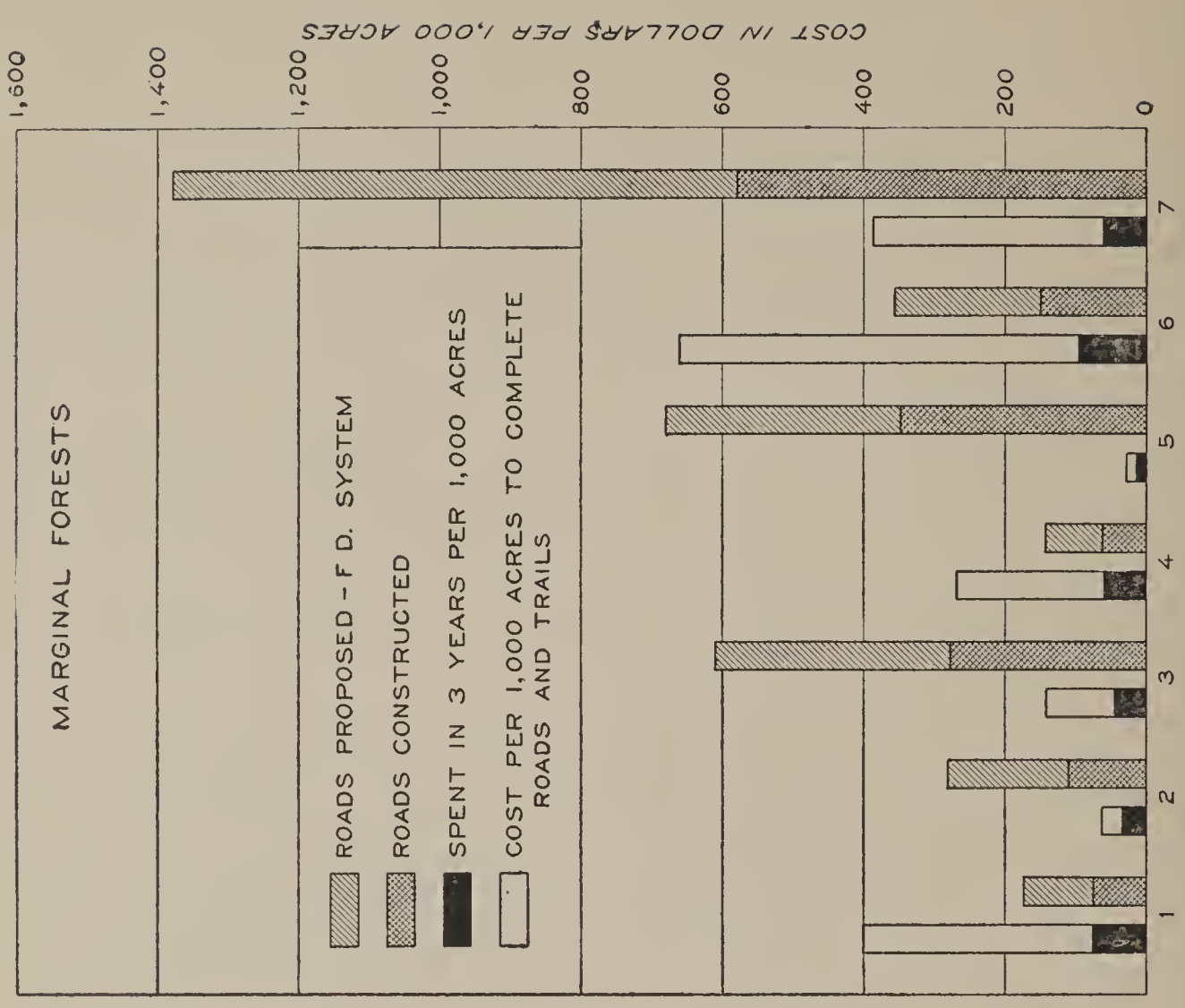
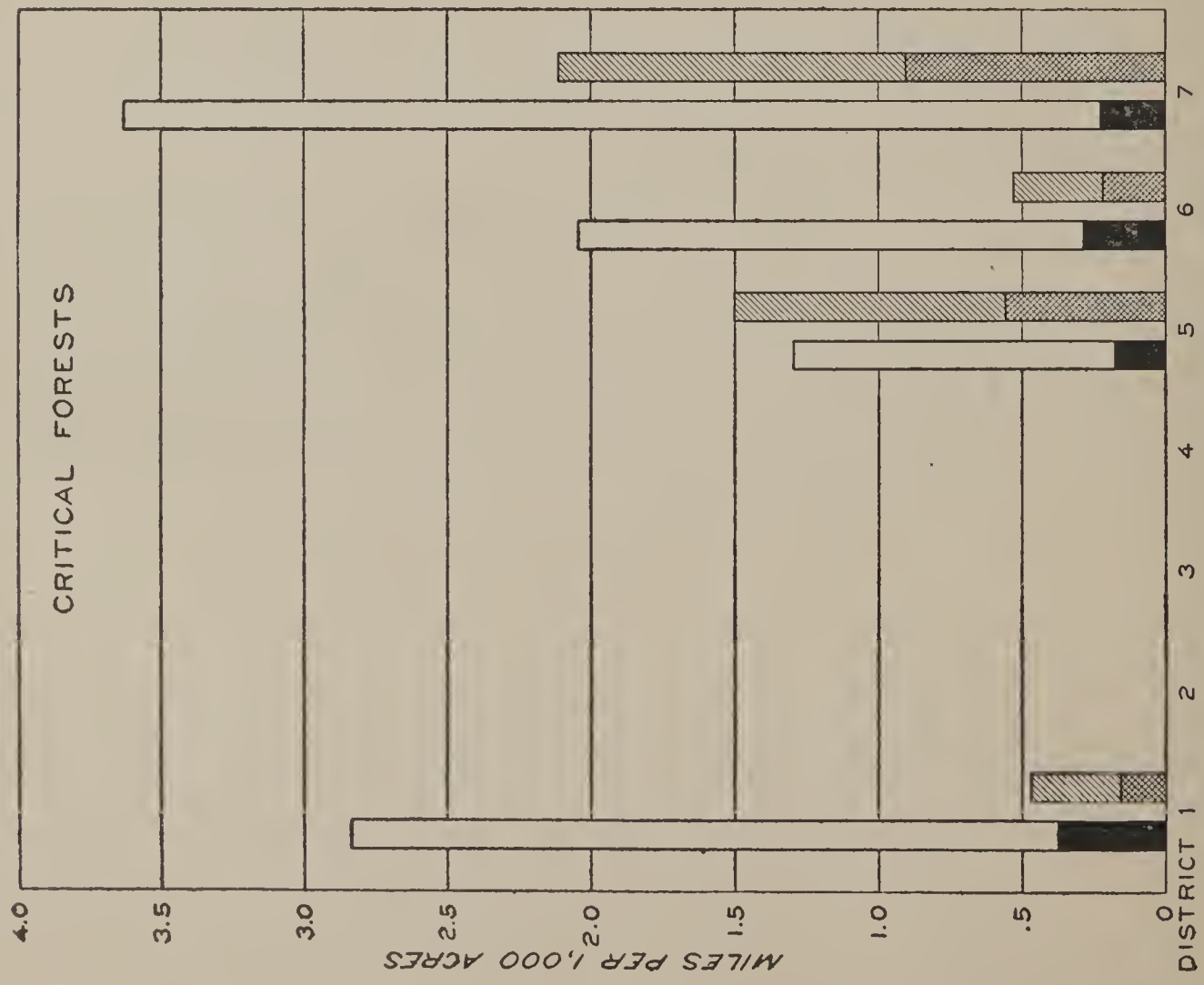
Within the Districts similar thought and action should be helped and hastened by these reports.

It is a challenge to the entire Service to find such a lack of co-ordination in fire control expenditures as that indicated. My own office has a real job ahead to fulfill its obligations as defined by the conference in this regard. The crux of the problem of getting the maximum reduction of fire losses lies, however, within the Districts. In effect, expenditures to further perfect already satisfactory fire control can only mean reduced progress where control is unsatisfactory. I want and expect the help of the District Foresters to correct this.

At the same time we must get a clearer and more adequate grasp of the road needs for general social and economic purposes. We must continue a reasonable division of appropriations between our own urgent fire needs and the public need for greater accessibility and usefulness of the National Forests.

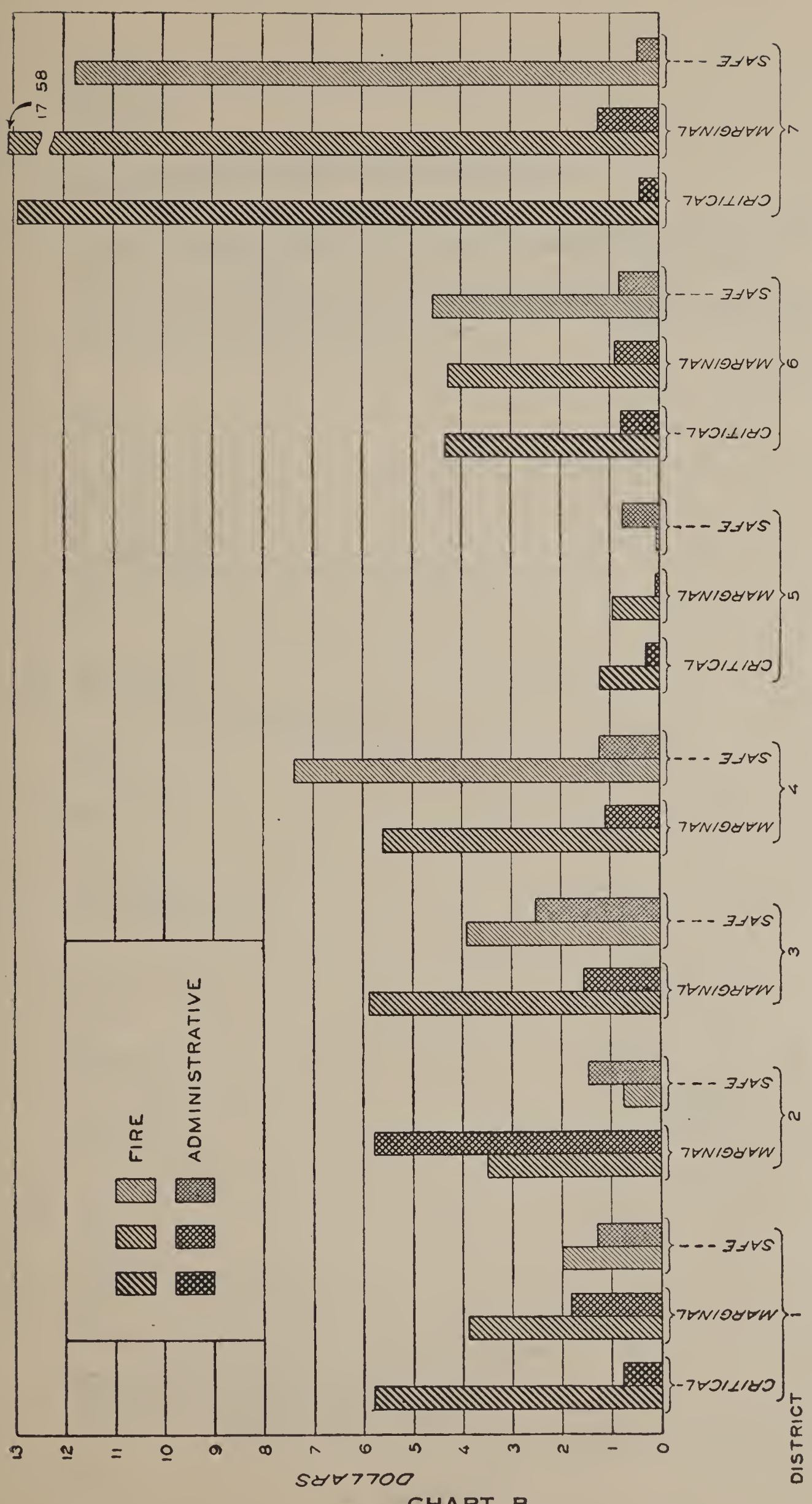
The report raises very pointedly the question of standards. What we must strive for is to attain a given purpose at minimum cost, whether that be in a guard cabin or a road. My office has herein a major responsibility and one which can only be redeemed by active help and participation from and by the District Foresters. All of this is particularly important and urgent in view of the large increases allowed for fire control.

R. Y. S.



STATEMENT OF ROAD AND TRAIL SYSTEM PER 1,000 ACRES - BY DISTRICTS

CHART A



ALLOTMENTS MADE TO FORESTS PER 1,000 ACRES IMPROVEMENT FUNDS FOR CONSTRUCTION, 1927 - 1929 INC.
(FIRE AREA USED FOR FIRE IMPROVEMENTS - GROSS FOREST AREA FOR ADMINISTRATIVE)

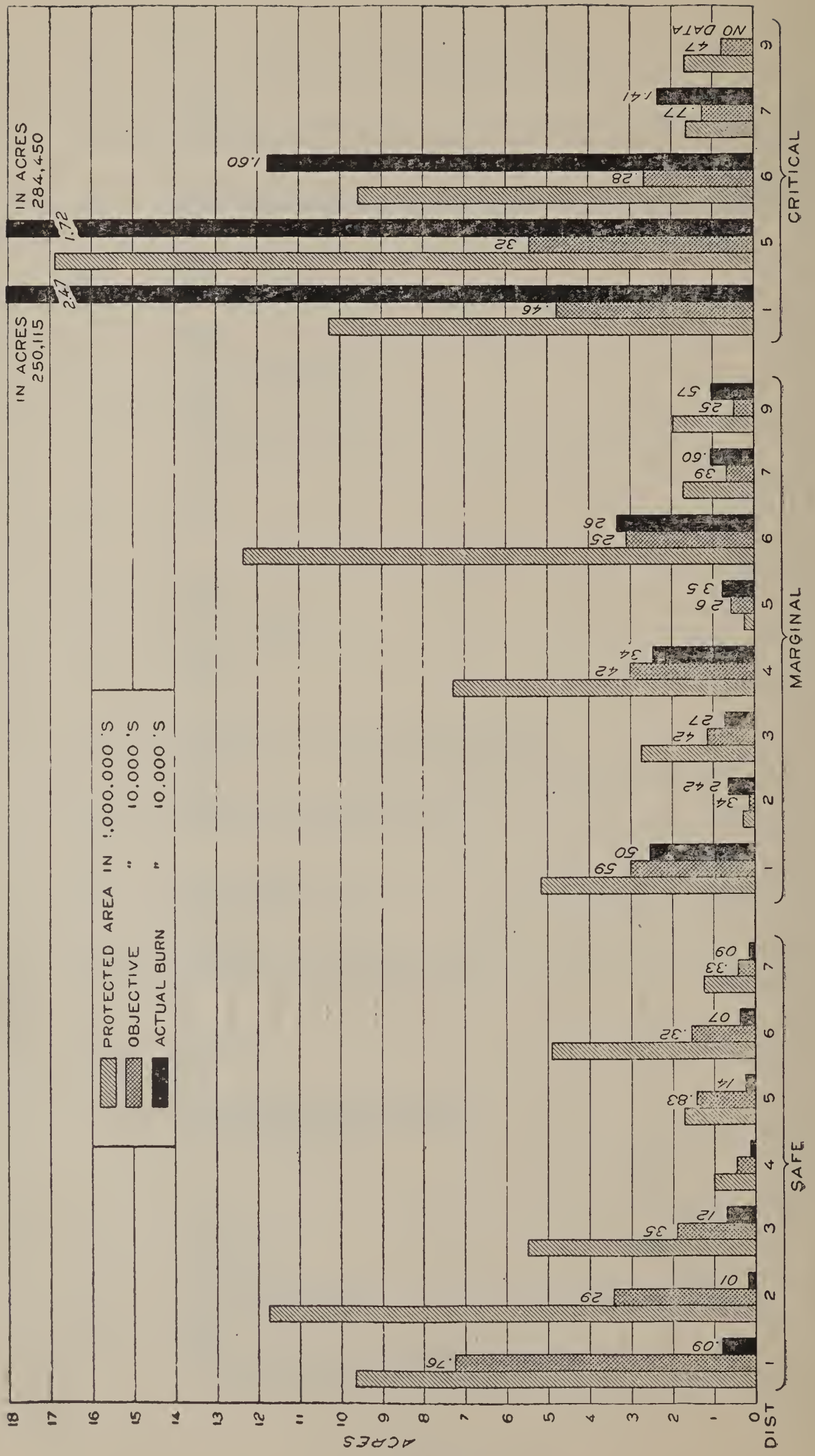


CHART C

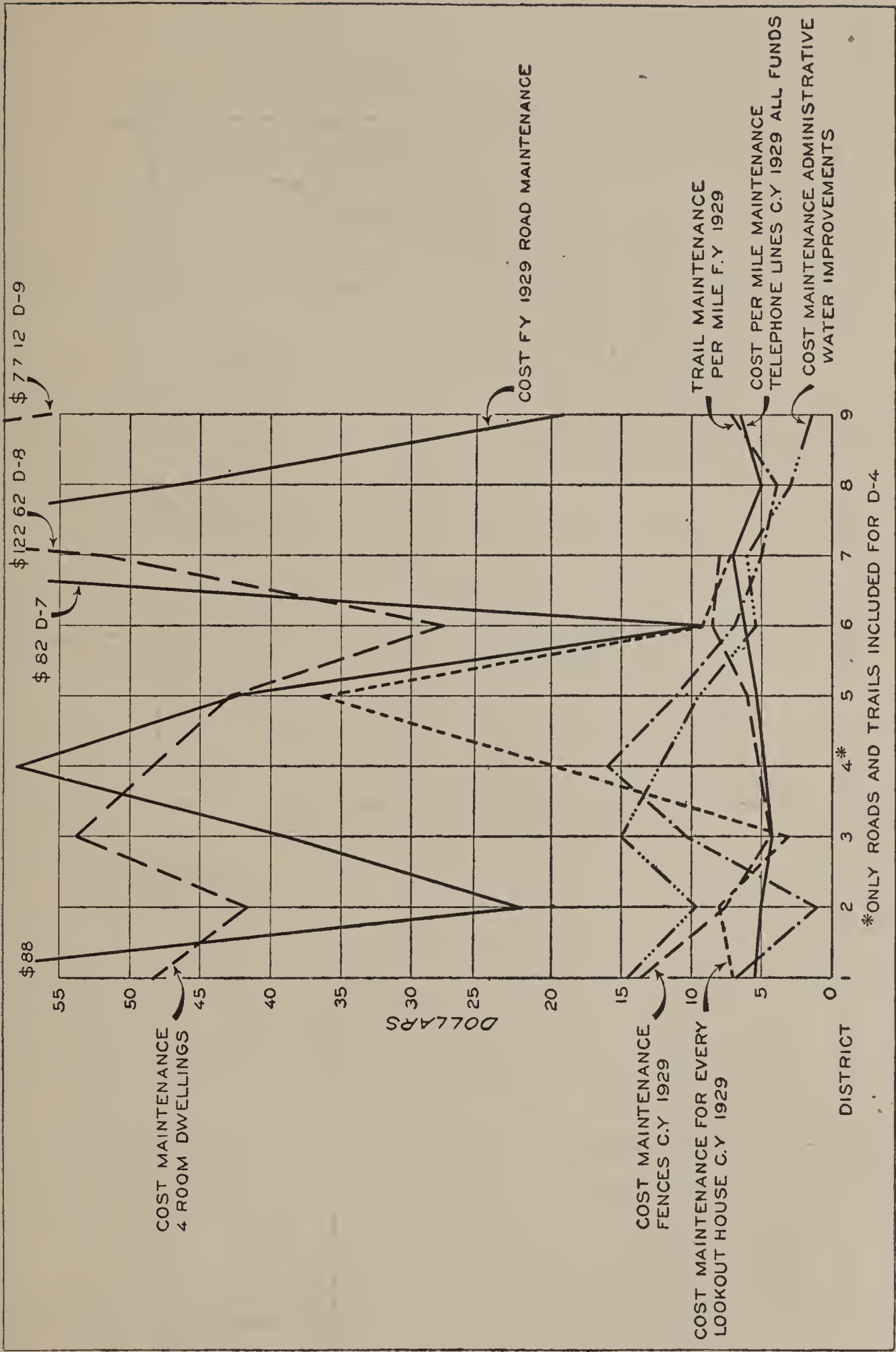


CHART D

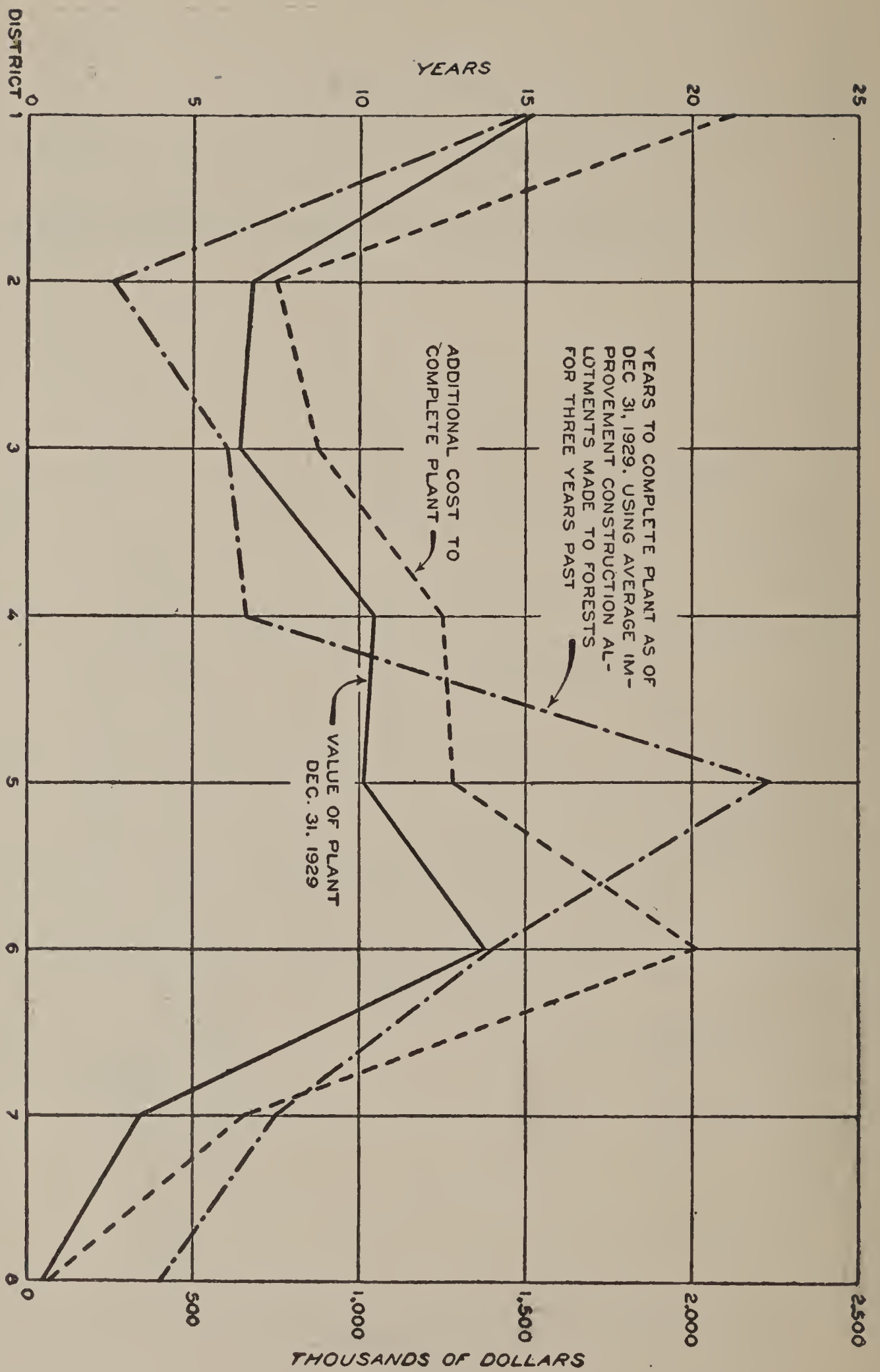


CHART E

OVERHEAD COMMITTEE REPORT

Topics 1 to 5:

The practice of the past of considering allotment estimates and of deciding allotment questions among Districts by the application of such information as the Forester's Office possesses of conditions in the field, has not been satisfactory and has given rise to many sharp criticisms. In searching for a more equitable method, the analysis and rating scheme which we are here considering has been brought to the fore. Every man has been thinking about the scheme more or less for some time, and it has been questioned from every angle. The Committee has discussed it from every standpoint we could think of and have heard the statements of a large number of men. Throughout the proceedings it has been evident that it has been very difficult for members of the Committee and for those heard, to separate the bigger principles involved from the immediate effect upon the administration of, and the funds for their respective units. It is believed we have reached a point where immediate effect has been given a secondary place and that the larger issue is recognized.

In addition to the questions of immediate effect, other questions have been raised which deserve consideration:

The chance for inaccuracy in the data and possibility of error have been repeatedly brought up and it appears necessary to admit these facts and to take the position that further study is needed and should be made to secure better data and to search out the errors as rapidly as possible.

It has been brought to the attention of the Committee that there are probably many intangibles which the scheme has not measured and which may not be mathematically measurable, but which are vital and must receive attention in administration. This matter deserves the closest consideration in order that the full field of administration may be covered.

The point has been made repeatedly that the scheme tends toward rigidity and that its results in some cases, even at the present time, conflict with the best judgment of the men most responsible for units. This point of view has merit and we urge that the application of the results of the scheme be subjected at all times to the closest scrutiny from the common sense viewpoint and that we guard against any machine-like decisions and keep clearly before us the fact that the scheme is an aid to judgment and not a control.

It has further been indicated in the discussions that the complexity of the rating scheme and the many factors used in its interpretation make a general understanding of it in the field impossible. Because of this lack of understanding, it will appear that the Washington Office is exercising an extreme form of control with its resultant loss of local control. This apparent loss of local control may affect adversely the attitude of the field force. In meeting this situation, in analyzing the District Offices, the Forester's Office should exercise extreme care not to disturb in a wholesale manner an organization now functioning properly, and should avoid appearance of arbitrariness as far as possible and should let the field in on all studies and analyses to the greatest extent.

The situation also places upon the field men a possibly greater re-

sponsibility for keeping all field members fully informed upon all phases of the scheme and to foster a willingness to contribute to the rating scheme an open-minded consideration based upon an assurance that the welfare of the entire Service is involved rather than that of any one unit.

In the consideration of overhead problems we urge that the District and Washington Offices set up defenses against adding more overhead. In many instances work which seems to demand more overhead can be handled without increase by careful analysis of the work of present members and by placing more responsibility further into the field. The extent to which some units are apparently over-inspected would indicate that some central units can decrease the number of inspectors, possibly providing office administrative assistance and in this way secure a sufficient degree of inspection at a less cost in men and in travel.

We have the following definite recommendations to offer:

We recognize the need of a Service-wide method, to be used as a broad guide, which is based upon detailed analysis of the work to be done for determining the size and form of organization. We approve this method of attacking the problem.

Satisfactory results cannot be secured unless loads and manning of all units of the District organization, i. e., ranger districts, forest overhead and clerks and the District Office overhead, are brought under the same thorough study and analysis. The Service has enough information available to enable it to begin to use that pertaining to the ranger district, and the supervisor's office, including clerks. The District Office organization should also be brought into the allotment question just as far as the best available information will permit. The District Office organization should be studied and analyzed just as thoroughly and completely, at the earliest possible date, as have the other units of the District.

If it is necessary in order to study the District office organization properly, to place another man in the Forester's office for that purpose, such action should be taken soon. In order to lay a proper foundation for the study of the District offices, the Forester should take steps to provide the Districts with a uniform outline for the use of the persons in the District office for keeping and recording the distribution of time.

In making the readjustments, the administrative difficulty of handling them, where reductions are involved, must be considered. The rate of speed in making inter-district adjustments should not be greater than 25 % per year for not over three years of the total amount of indicated surpluses. The method of handling readjustments we are willing to leave to the Forester.

We recommend that the training item as worked out by the Training Committee be introduced into the allotment scheme at the earliest possible date.

Comment:

Approved. My comments on the report by the Ranger District Administration Committee apply equally well to the foregoing report. I agree with the Committee that complete understanding must be sought to assure the entire success of the plan. Consequently, the

spreading to the field of a complete understanding of policies and methods is essential to forestall the fears of "rigidity" and "loss of local control" mentioned.

Such material as is available concerning District office overhead will be considered in connection with the allotments to the Districts but, as the conference was informed, the data is too meager to carry much weight. Analytical studies of the District office work as recommended by this report will probably be started during the coming winter. The recommendations, as to obtaining additional data for strengthening the bases for the rating of other positions, are also in line with our plans in this respect; indeed, as I consider how standards will vary as new and better methods are developed, it occurs to me that this belongs in the recurrent class of jobs. It is not, however, in the class which can be handled by one or two specialists and even approach the limits of its requirements and possibilities. The assistance of each Branch and each District on this project will accordingly be needed.

R. Y. S.

Topic 6. Promotion Policy

We understand that the Forest Service is already committed to the policy of appointing all Junior Foresters and Junior Range Examiners at an entrance salary of \$2,000. We approve this policy and recommend that all men appointed from the Ranger eligible list be also appointed at the same salary, i. e., \$2,000. In connection with this policy, we recommend that all men of the Junior Forester, Junior Range Examiner and Ranger grades now receiving less than \$2,000, and whose efficiency ratings warrant the action, be advanced to \$2,000 at the earliest practicable date. This should be done by direct action without consideration of the formal promotion procedure if possible. If such direct action is not possible, these cases involving men receiving less than \$2,000 should receive first consideration at the regular July 1 promotion date.

The present plan of promotions by Districts on the basis of an allowable per cent of the salary roll is satisfactory.

Correlation of promotions among Districts does not appear practicable except through advice and information from the Washington Office. To aid each other, each District should once a year send to all other Districts a list of personnel including Supervisors and above, showing salary status.

Every effort should be made to secure an appropriation from which to cover promotions. In the absence of such provision, promotions should proceed as needed within the restriction of the average salary rule, although such action may involve funds needed for carrying on improvement work.

The average salary provision of appropriation acts, introduces an objectionable and wholly unwarranted limitation on the operation of the classification law and threatens early stagnation in many grades. It should be removed.

Comment:

The report is approved. It outlines the promotion policy now being followed or advocated by the Forester's office.

R. Y. S.

Topic 7. Change of Titles

We recommend that the necessary action be taken at the earliest practicable date, to change the word "District" to "Regional" or "Region" in the titles applying to the field divisions as follows:

<i>Present Title</i>	<i>Recommended Title</i>
District Forester	Regional Forester
Assistant District Forester	Assistant Regional Forester
District Engineer	Regional Engineer
Associate District Engineer	Associate Regional Engineer
Senior District Forest Inspector	Senior Regional Forest Inspector
District Forest Inspector	Regional Forest Inspector
Associate District Forest Inspector	Associate Regional Forest Inspector
Assistant District Forest Inspector	Assistant Regional Forest Inspector
District Fiscal Agent	Regional Fiscal Agent
Deputy District Fiscal Agent	Deputy Regional Fiscal Agent

Comment:

Recommendations to this effect have been sent to the Secretary for approval.

R. Y. S.

Topic 8. Legal Status of Activities

This Committee has considered the question: "Are we conducting activities of doubtful legal status?" From the information we have been able to secure, we believe this to be a matter of opinion which can be settled only by consulting the proper legal advisors. So far as we have been able to ascertain, no activities are being carried on which have not received legal examination and sanction.

Comment:

Noted.

R. Y. S.

Topic 9. Wording of Appropriation Acts

The S. & F. P. appropriation act should be amended by the addition of the words "and maintenance" after the word "construction". This would clarify the propriety of the use of this fund on maintenance work.

The S. & F. P. fund should be understood by District Officers and Supervisors to authorize expenditures solely on sanitation and fire prevention work and although it includes such improvements and basic conveniences as tables and benches, it cannot be extended to such recreation facilities as swings, merry-go-rounds, or entertainment facilities. Further, such S. & F. P. improvements are limited by law to campgrounds.

Comment:

Approved.

R. Y. S.

Topic 10. Record of Accomplishment

We recommend that steps be taken to build up a record of a few men in each District or other unit, who give special promise as material for higher positions such as District Forester, Assistant District Forester or

Supervisor. In the interest of uniformity and as an aid we offer the following outline:

1. Name and age.
2. Position for which he is considered a prospect.
3. Experience: Positions filled with dates.
4. Accomplishment: For each position held state concisely:
 - (a) The status of the job when he took it over,
 - (b) The status when he left it, and
 - (c) The difference, or what he added to the job.
5. Initiative: What has he initiated? Give policies, methods, or equipment which he originated:
 - (a) In general Service use,
 - (b) In local use only, and
 - (c) Things initiated that failed.
6. Personnel:
 - (a) Is he a judge of men as shown by his record? (Go over all personnel memoranda, particularly those of several years back, and compare his size-up of men with their future development.)
 - (b) Leadership: General attitude of men under him toward him and toward their work. (Not based on one or two outstanding men.) What per cent of men working under him for more than a year have noticeably developed or improved? (Not based on his ratings alone.)
7. Needed assignments as a further training or test. (To be checked off as realized.)
8. Cumulative accomplishment record: Each year enter the man's outstanding accomplishment for the year.

Comment:

Approved. The foregoing should become an important part of the personnel control record in each District.

R. Y. S.

**RANGER DISTRICT ADMINISTRATION COMMITTEE
SECTION I**

Topic 9. The use and value of Ranger District Analyses and Plans.

The Committee wishes to recognize at the start the tremendous value of the ranger job analyses to the National Forest Districts. No serious question has been raised regarding their usefulness and value as an administrative tool. The Committee strongly endorses the fundamentals of the job analyses and the plans based upon them. The undertaking has made a major contribution toward the Service effort to bring about truly business-like management of the ranger districts on a scientific basis. Certainly the Forester's office is to be commended for its leadership in this development. This accomplishment has grown out of a Service-wide effort to get better administrative tools.

These values are primarily felt in the National Forest Districts. The Committee believes that recognition of the values is general and that it is

the manifest intention of each National Forest District to use the existing analyses and plans and to continue their systematic revision and improvement.

The Committee recognizes the significance of our own history in showing the enormous capacity of our field men to absorb and to use such job as this. A conspicuous example is furnished by the fine way in which the drive for fire plans as set up at Mather Field was accepted and the plans developed and put to use. There have been many other similar examples.

We recognize that there will remain, under all the job analyses and planning, the fullest opportunities for individual accomplishment and the development of individual prestige.

We recognize, too, that the greatest benefits of such analyses and plans will come from sympathetic understanding and appreciation of them on the part of our field men. To bring about this understanding is our job, and as done, it will minimize any danger of unfavorable reaction, and will focus attention on the true usefulness and value of the undertaking.

Since there is evident a genuine desire to make the most of the analyses and plans, and since the Committee has recognized some confusion regarding the points at issue, it wishes to clarify them. The first question is whether the present form and detail of the analyses is necessary in the initial roundup. In our opinion it was and is.

The second question is whether after analyses and plans have once been well done in a particular Ranger District, National Forest or region, the existing instructions of the Forester should apply to subsequent revisions or re-analyses. The Committee can only say in this regard that the extent to which the analyses may be used for inter-regional financial coordination will, in general, control the extent to which uniformity in methods of making the analyses, should be required. It is recognized that that the essentials which should be in all analyses are the objectives and standards, the detailed consideration of each job needed to meet them, the segregation of the time set up into non-field, job and travel, and a brief statement of volume or quantities involved, so that the steps taken in making the analysis may be followed through. The present option as to frequency of balancing Parts 1, 2, and 3 seems adequate.

It is also recommended that for analysis purposes travel time for jobs, the location of which cannot be accurately foreseen, be arrived at by the use of averages or by some other simple method.

Particular questions have been raised regarding the permanent necessity of twelve-month trip plans, and whether the existing trip schedule should universally be regarded as the actual working plan. In regard to these, the Committee is convinced that trip plans are an essential part of the original analysis and that in some of the western Districts possibly not twelve-month, but seasonlong trip plans will, as revised from year to year, be continued as a matter of best practice and of District option. In any event, option can safely be left with the District Foresters as to the length of period for which the revised written trip plans should be made; it being agreed that they should ordinarily be revised if necessary, at least a month in advance of use. Needless to say, judgment should be used in the extent to which they should be adhered to. The preparation of trip plans should represent the best accumulated experience gained in building progressive trips.

These plans thereby having a continuing value should be of record for new Rangers on the Districts.

In short, it is the details rather than the fundamentals of the analyses and plans that now cause concern on the part of field officers. As these minor difficulties are left to the option of the District Foresters, through modification of existing instructions, the true usefulness and value of the plans will be more fully realized and any unfavorable reactions minimized.

The Committee recognizes that additional work especially as to follow-up, will be done in each National Forest District to perfect and put into effect the Ranger District plans. It believes that this is tremendously important in order to get the plans firmly established as a going concern.

The Committee recommends that the Supervisor analyses and plans go forward, but that they should not be pushed to the extent of interference with essential work on the ranger district plans.

This Committee is strongly convinced that the studies conducted to date have definitely and promisingly opened the way for truly scientific and most businesslike approach to our problems of business administration and executive management. The Committee believes that the logical development of this feature of our work is certain to be worth all and more than it will cost. We recommend to the Forester that it should be carried forward, a definitely recognized, manned and financed feature of our current administrative program. It is doubtless physically impossible now; but the Committee recommends that the Forester consider the feasibility of securing eventual correlation between National Forest Districts through additional field checks and reviews of objectives, standards and time allowances by members of the Forester's staff, working on the sample plot basis with District and Forest officers.

In the Committee's judgment it is entirely reasonable to look forward to a day when our entire financial structure will be solidly built upon the basis of currently conducted and increasingly exact administrative analyses which will command the full confidence of all concerned. In all this we are not leading into any new or untried field. Rather we are simply following a course which American industry in general has tested thoroughly and found highly profitable and which our own experience in the Forest Service to date has indicated to be sound.

Comment:

Approved. I believe that Supervisor Kuhns, in his statement that many field men still fail to understand all the policies and methods regarding analyses and plans, put his finger on the cause for any antipathy that may exist toward them. As the report states, they are, if properly followed up, invaluable administrative tools and as such no effort should be spared to have all members of the field force gain as complete an understanding of them as is held by most members of the District offices.

Experience has clearly shown that good work of an analytical character cannot be done without considerable digging in. The minimum of restrictions in the methods to be followed in making the administrative studies have been set up which will still attain the necessary degree of good workmanship that is required by the use to

which the analyses are being placed. I am gratified that this point of view is also held by those who attended the conference and, since the report recommends no material changes in the policies and methods now in effect, no confusion should result which might lead even to a temporary let down in the desired and gradual strengthening which has been taking place in the development of the analyses and plans. On the contrary a greater cohesion and vigor in the movement is foreseen.

R. Y. S.

RANGER DISTRICT ADMINISTRATION COMMITTEE

SECTION II.

Topic 10. The use of analyses in making allotments.

We accord to the Ranger District job load analysis the respect due it as a thorough and fine piece of work. Its value as an indispensable aid to the coordinating function of the Forester is clear, and is in line with the experience of American industry.

We approve this method of attack on the problem of determining the size of organization and of balance between Districts. The determination of the Ranger District job load measures only one of the major factors that the Forester must consider in making allotments. The other broad divisions —Forest overhead and clerks, and District Office overhead, must also be taken into account. The first of these has already been subjected to analysis.

We believe the District Office organization should be analyzed thoroughly and completely as soon as possible and work on the Supervisors and clerical forces rounded out, so that the information may be as complete and reliable as that for the Ranger District phase.

Apparently it is necessary to add a man or men to the Forester's Office in order to make the progress in this field that we believe desirable. We should like to concur with other Committees in a recommendation that the Forester do this soon.

The Service, through the analyses already made, has the most accurate and comprehensive picture yet available of the Ranger District and Forest overhead and clerical phases of organizations. We recommend that the Forester accept these data, check them with his judgment and with new information as obtained on all phases, and start a program of financial readjustment that appears necessary. There is clear evidence that inequalities in resources to do the total National Forest job to a given level, exists between National Forest Districts.

The Forester must recognize this. In making the readjustments, the administrative difficulty of handling them, where reductions are involved, must be considered. The rate of speed in making inter-district adjustments should not be greater than 25 % per year for not over three years of the total amount of indicated surpluses. The method for handling readjustments we are willing to leave to the Forester.

We recommend that the Forester see to it that Mr. Loveridge put the policy and methods regarding this entire analysis job in published form at the appropriate time.

Comment:

I wish to express to those who attended the conference my admiration and gratification in the broad Service-wide point of view with which the results of the various computations were accepted and used. This was one of the high lights of the meeting.

The "Blue Book" of Correlated Standards and Converting Factors, as well as the computed weights and other related material is being sent to the Districts under separate cover.

R. Y. S.

REPORT OF THE FIRE CONTROL COMMITTEE

Topic 14. Objectives in Fire Control—and Possible Means of Measurement

Damage from fires to forest values varies considerably in the different forest types and the objectives in fire control must be based mainly upon consideration of these variations in damage. At the present damage data for the important forest types is not available. The Committee has attempted to arrive at some usable and acceptable indices which will reflect the inherent values at stake in each type and the degree of damage that follows fires. We have had before us many competent witnesses and with their help have set up a scale representing the relative areas which can be burned in each type with equal loss. The factors considered in arriving at this index were:

1. Timber value—present or potential.
2. Destruction of site value by fires.
3. The difficulty of reestablishment of the forest following fires.
4. Creation of future fire hazards which will prevent the maintenance of the forest itself.

It was generally agreed that the highest average damage per acre occurs in the spruce and white pine types. For this reason these types have been given an index value of one. The index value for each other type was determined by estimating the area of burn that would result in damage equal to that incurred on the average acre of white pine or spruce burned over.

From a timber production standpoint, complete fire exclusion on the important and valuable types, i. e., western white pine, would be justified if economically attainable. Since complete fire exclusion within the next decade is obviously impracticable, the Committee sets up one-tenth of one percent (.1 %) permissible average annual acreage burned for all types included in the one index. Within the limits of such losses (.1 of 1 %) intensive timber management can be carried out.

After setting up the one-tenth of one per cent average annual acreage burned for Spruce and White Pine, the amounts of allowable acreage burned for the other types are arrived at by comparing their index figures with the value established for White Pine and Spruce.

Watershed values were considered independently in order to simplify the process of analysis. For any given forest area the watershed indices apply only when they are lower than those of the particular timber type involved.

The table of indices and objectives is attached. The Committee recognizes that these values cannot be accepted as final or absolutely correlated as between types. Guided by common experience and judgment, we feel that this table may be used with safety in establishing for the present protection objectives for the types considered.

Using these indices, each District has prepared for each Forest unit by types, an allowable average annual acreage burned. A composite allowable acreage by forests has been computed, and the average or composite objective for each forest has been expressed on a percentage basis. Not all Districts have equally uniform quality of data on types within each Forest unit. The best available data has been used and the subdivisions of the types have been made on a broad basis. Minor type differences or small areas of a type have not been segregated, but have been included in the surrounding types. On areas where fires in one type are likely (as shown by past experience) to spread to another of higher value, the higher classification has been applied.

With the objectives in burned area determined and correlated by types and regions, the next task is to determine the means of meeting these objectives and the probable costs involved. The Committee is agreed that by far the greatest part of the problem can be resolved into a matter of hour control, and if protection plans based upon this consideration were available for all regions, would indicate clearly the relative needs for funds.

The first step is the determination of the hour control standards by types and regions that are necessary to hold average annual burned area to the objective set up. The second step is the determination of the form and kind of organization that will produce the desired results at the lowest cost. The third step is the building of comprehensive protection plans. based upon this information, giving due weight to risk factors.

In determining the hour control standards for the various types and regions, we believe that the basis should be in general the experience of the average bad year. We realize that certain portions of the organization can be expended fairly readily, particularly a portion of the man-power, and that this power of expansion should not be neglected in formulating plans. On the other hand, the *facilities* for fire control as contrasted with man-power, do not admit of rapid expansion and must be planned for peak load conditions. Similarly, competent overhead cannot be provided rapidly. In general, then, our plans should be based on the average bad year, with a frank realization that for the good year we are over-organized. Under skill-full management this will not mean an avoidable waste of effort since savings can be diverted to more rapid progress in providing the various facilities needed.

In the absence of Service-wide information concerning hour control standards and the organization and facilities necessary to accomplish them, we are forced for the time to forego this means of measuring relative needs for fire control purposes. We believe that the next best measure of accomplishment is the difference, by types and regions, between the average annual area burned and the protection objectives. This is a reasonably usable indication of present performance and the relative needs for funds, in computing present accomplishment the average annual loss for the bad years dur-

ing a fairly recent period is a better basis than the average loss for all years of the period. While it may be argued that our burned area objectives should be modified accordingly, we believe that this inconsistency can be neglected in the present attempt to bring relative needs by types and regions into bold relief.

Were it possible we would eliminate from the record the portion of the burned area resulting from unmistakable blunders. Since such segregation is of doubtful practicability as far as past records are concerned, we are forced to neglect this factor. This disadvantage is mitigated, however, by the fact that all District have had much the same experience, and therefore inter-district relationships should not be distorted materially by including these burned areas.

The Committee realizes that the records of acreage burned should be given by types and comparisons made by type. Since the burned over area records are not segregated by types, we are forced to use the composite figures for each forest unit. Necessarily this also means using the composite objective for each forest in making the comparisons.

Future records should be kept so that data concerning burned area by types and burned area due to inexcusable human blunders will be available. When we get down to an hour control basis for considering relative needs, the latter factor automatically fades out except in so far as it reflects a need for additional training and inspection or for increasing our insurance factor against human failure. These considerations may and often will involve more funds.

In attempting to analyze the needs for additional protection the Committee has not considered regional District needs as a whole but has approached the problem from the individual forest unit basis.

When the records of allowable annual acreage burned and the actual annual acreage burned are examined, we find as might be expected, wide variations between units in the same District. To break down this problem for the purpose of comparing three logical subdivision are possible; units where the burned acreage greatly exceeds the objective, units where the burned acreage approximates the objective and lastly, units where the burned acreage is well within the limits of the objective.

These groups have been classified as the critical forests, the marginal forests and the acceptable forests. The attached tabulation shows this grouping for each District. Each District assisted in making the segregation.

It is interesting to note that the average ratio between burned acreage to allowable acreage for the group of critical forests in each District shows consistently about a five to one ratio, and for the marginal forest approximately a 1 to 1 ratio.

The Committee strongly urges that in allotting additional protection funds from whatever source, first consideration be given to the critical forest, next to the marginal.

The Committee recommend the allocation of S. & E funds in the ratio of from .2 to 1 to 4 to 1 between critical and marginal forests.

For the allocation of the \$188,000 (Fire Prevention) the Committee has used a 2.5 to 1 ratio, and the tabulation for the distribution of these funds are attached. Just how these funds are to be used is a question for

the Chief of Operation and the various District Forester to decide. The guiding principle in the use of this increase and other funds available, as between personnel or equipment, should be the reduction of area burned.

In the allocation of road, trail and improvement funds, the Committee recommends that the needs of the critical forest be weighed 3 or 4 to 1 as against the needs of marginal forests. Evidence before the Committee indicates that the D. F. forests in the marginal group in District 6, and some other in other Districts should for the purpose of allocation of road and trail funds be considered as the critical group. In the tabulation these have been starred.

While the committee believes that these methods of calculating the allotments are the best available until complete protection plans are formulated upon the basis of hour control, it recognizes the limitations of the data at hand. It does not feel competent to recommend any decreases in present protective effort even on units where the average annual acreage burned is considerably below the set up objective. This matter is a question that the Districts themselves can well consider. Where high values are at stake, even where the objectives of burned acreage have been secured, it may be good business to maintain present protective effort or even to finance additional protection. This may frequently result in other compensating savings, such as decreases in FF expenditures, less damage on critical areas of high value, and better effect on the public point of view. Moreover, we realize that the lighter fire districts, such as 3 and 4, may have special problems, such as the modernizing of fire control equipment, that cannot be financed adequately on the above basis. Such needs should be considered on their merits by the Forester, and if larger allotments than those indicated above are warranted, the necessary amounts should be deducted from the total before making the detailed calculation in the same manner as the amounts set aside for Districts 2, 8 and 9.

Topic 14a. Damage Ratings by Types.

1. Timber Values

Type	Relative Area of Burn Giving a uniform amount of damage	Fire Control Objectives
White Pine	1	.10 %
Spruce	1	.10
Douglas fir		
D-6	1.5	.15
Southern D-3	1.5	.15
Rocky Mt.	3.0	.30
Larch Fir	2.5	.25
True Firs		
D-6	2.0	.20
Northern D-5	2.0	.20
Central D-5	3.0	.30
Western Yellow Pine		
D-6	2.0	.20
D-5	2.0	.20
Black Hills	2.0	.20

D-1	2.0	.20
South Idaho (D-4)	2.0	.20
Other Rocky Mt.	3.0	.30
D-3	3.0	.30
Mixed Conifer (D-5)	2.0	.20
Lodgepole		
East Cont. Divide	6.0	.60
D-4	10.0	1.00
West Cont. Divide	10.0	1.00
Jack Pine	4.0	.40
Norway Pine	2.0	.20
Short Leaf Pine	8.0	.80
Loblolly Pine	5.0	.50
Slash Pine	5.0	.50
Sand Pine	10.0	1.00
Long Leaf Pine		
General type	15.0	1.50
Special	10.0	1.00
Northern Hardwoods	1.5	.15
Appalachian Hardwoods	5.0	.50
Southern Hardwood	5.0	.50
Oklahoma Hardwood	5.0	.50
Aspen—Commercial	7.0	.70
Non-commercial forests	12.0	1.20
Brush, grass, woodland, sagebrush, etc.	25.0	2.50

2. Watershed Values.

Where the watershed values, rather than timber values, govern the degree of protection needed, the following ratings shall be used. In other words, the foregoing type ratings shall be lowered (where watershed values are involved) if they are higher than the following scale.

Watershed Types

Great Damage—Intensive use	4.0	.40 %
Moderate Damage Intensive use	5.0	.50
Heavy Damage Moderate use	5.0	.50
Moderate Damage Moderate use	7.0	.70
Heavy Damage Little use	7.0	.70
Low Damage Great use	7.0	.70
Relatively remote		
Watershed Values	12.0	1.20

*Topic 14b. Direct forest costs for fire prevention and presuppression—
Fiscal year 1929.*

Critical Forests

Marginal Forests

District One

Blackfeet	\$ 21,433
Clearwater	35,674
Coeur d'Alene	29,478
Flathead	39,370
Kaniksu	21,665

Missoula	\$11,097
Cabinet	22,920
Lola	21,690
Nezperce	45,576

Critical Forests	
Kootenai	30,738
Pend Oreille	20,361
Selway	39,547
St. Joe	28,049

District Totals \$266,315

District Two

Nebraska	\$ 290
Wichita	155

District Totals

\$ 445

District Three

Coronado	\$ 7,250
Gila	4,999
Lincoln	6,065
Cacanino	7,981

District Total

\$ 26,295

District Four

Challis	\$ 4,420
Idaho	10,868
Salmon	8,087
Payette	6,266
Weiser	4,622
Boise	7,271

District Totals

\$ 41,534

District Five

Angeles	\$ 36,057
California	24,219
Cleveland	11,544
Klamath	29,563
Lassen	22,884
Plumas	41,677
San Bernardino	18,887
Sequoia	25,290
Shasta	33,035
Sierra	19,820
Stanislaus	22,139
Tahoe	18,940
Trinity	25,521
Santa Barbara	27,572

District Totals \$367,148

Eldorado	\$ 17,947
Modoc	11,609

District Six

Chelan	\$ 21,001
Columbia	21,339
Colville	16,086

Crater	\$ 23,196
Deschutes	20,249
Fremont	11,229

\$ 29,556

Critical Forests	
Mount Baker	18,276
Mount Hood	41,307
Olympic	29,042
Siskiyou	26,270

District Totals \$173,321

Choctawhatchee	8,346
Kisatchie	67
Ocala	6,941
Osceola	199
Ouachita	22,720
Ozark	13,033

District Totals \$ 51,306

District Totals —
Critical Forests

Huron	\$ 3,121
Marquette	2,702
New Purchase Units	

District Totals \$

Grand Totals \$858,090

Marginal Forests

Ochoco	14,306
Ranier	28,950
Santiam	12,985
Siuslaw	4,982
Snoqualmie	18,060
Umatilla	18,826
Umpqua	19,864
Wenatchee	26,232

\$198,879

District Seven

Allegheny	\$ 3,745
Cherokee	10,226
Monongahela	6,668
Nantahala	7,881
Pisgah	6,776
Unaka	8,635

\$ 43,931

District Eight

Marginal Forests

District Nine (Omit from totals)

Chippewa	\$ 2,412
Superior	12,479

\$ 14,891

\$441,923

Topic 15. Division of new funds between Critical and Marginal groups.

Give marginal forests a weight of 40 per cent as compared with 100 per cent for the critical forests.

Prevention and presuppression costs on critical forests.....	\$858,090
Prevention and presuppression costs on marginal forests.....	\$441,923
Weighted 40 %	176,769
Total	\$1,034,859

Since cost data concerning District nine is incomplete, this district is omitted from the calculation. The needs of District Nine must be weighed by the Washington office against similar needs of other districts. District Eight should be handled in the same way. For the purpose of this calculation the sum of \$8,000 is deducted from the new funds likely to be available. The committee does not set up this sum as representing the needs of the District omitted from the calculations. (This sum may be either too small or too large). We merely want to illustrate the principles and methods involved.

Critical Forests

858090

• ————— x 180,000 equals \$149,100.

1034859

Marginal Forests

176769

————— x 180,000 equals \$30,900.

1034859

In calculating the allotments the following factors have been considered:

- (a) Area in need of protection.
- (b) Present cost per acre.
- (c) The job load as expressed by the ratio of area actually burned to allowable area.

The method used is the same for both the critical and marginal forests, since the priority of the critical forests has already been recognized. The detailed calculations follow.

Topic 15a. Division of funds allocated to critical forests.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
District	Area Protected in M Acres	Cost of Prev. & Presup.	Cost per acre	Ratio of burned area to allow	Load Factor Product of Col. 1 & Col. 4	Allot. Product of Col. 3 & Col. 5	Index reduced to percent	Calculated Allotments
1	10262	\$266,315	.026	$\frac{250}{48} :: 5.2$	53,400	1389	33.2%	\$49,500
5	16699	367,148	.022	$\frac{284}{54} :: 5.3$	88,800	1955	46.7	69,630
6	8556	173,321	.020	$\frac{117}{27} :: 4.3$	37,300	747	17.9	26,690
7	1649	51,306	.031	$\frac{23}{13} :: 1.8$	2,970	92	2.2	32,800
Totals	38306	\$858,090				4183	100.0	\$149,100

Topic 15b. Division of funds allocated to marginal forests.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
District	Area Protected in acres	Cost of Prev. & Presup.	Cost per acre	Ratio of burned area to allow	Load Factor Product of Col. 1 & Col. 4	Allot. Product of Col. 3 & Col. 5	Index Reduced to Percent	Calculated Allotments
1	5,184	\$101,283	.019	$\frac{25.3}{31.5} :: 0.80$	4147	79	17.6%	5440
3	2,762	26,295	.009	$\frac{7.1}{11.6} :: 0.61$	1685	15	3.3	1020
4	7,238	41,534	.006	$\frac{25}{31} :: 0.81$	5863	35	7.8	2410
5	2,160	29,556	.013	$\frac{7.6}{5.4} :: 1.41$	3046	40	8.9	2750
6	12,408	198,879	.016	$\frac{33.6}{31.0} :: 1.08$	13401	214	47.7	14740
7	1,710	43,931	.025	$\frac{10.2}{6.6} :: 1.54$	2633	66	14.7	4540
Totals	31,462	\$441,478				449	100.0	\$30900

NOTE—It seemed advisable to drop District Two from the foregoing calculation. Its needs should be handled in the same manner as those of District 8 and 9.

Topic 15c. Summary of calculated allotments.

District	Critical Forests	Marginal Forests	Total
1	\$49,500	\$5,440	\$54,940
3		1,020	1,020
4		2,410	2,410
5	69,630	2,750	72,380
6	26,690	14,740	41,430
7	3,280	4,540	7,820
Total	\$149,100	\$30,900	\$180,000
Tentative contingent for Districts 2, 8 and 9			\$ 8,500
			<hr/> \$188,500

Topic 16. Dissemination of ideas between Districts.

The necessity for keeping abreast with developments by actually seeing work on the ground is worth the necessary investment in time and money. The Districts recognize the value of conferences and meetings, but the Committee believes more will be accomplished in providing for frequent, regular inter-district field trips during the field season.

To insure that this is put into effect, provision in the work plans and field schedules of Forest Officers engaged in fire control should definitely be made for this purpose.

As a further step in this objective, we recommend that a member of each of the Fire Districts be appointed on an active advisory committee for the fire investigations to be initiated on the Shasta National Forest. This Committee should participate jointly in setting up the program and should periodically observe the work while it is underway.

It is suggested that the Forester's Office can in some systematic manner further facilitate the dissemination of information describing new developments in equipment, organization, and fire technique.

Topic 17. Method for determining length of fire season.

The length of fire season for which regular S & E funds are set up, should be determined on the basis of average season for each position. The season should represent the average opening date as indicated by the actual occurrence of a reasonable number of fires for about ten years. The same principle should guide in determining the closing dates. Adequate provision should be made for group and individual training and placement before the opening date.

To finance the early and late periods, emergency guards paid from F. F. Funds should be used as necessity dictates.

The Committee feels that the best investment in taking care of early and late season fires can be made by providing detection rather than by extending the period of guard employment.

Topic 18. Statistical Records.

The Committee has no evidence as to just what use different Districts have made of the required sheets in the A to K series, neither has it information which would guide it as to desirable revision. It does recognize the value of having a continuous record maintained for many years on a com-

parable basis for purposes of current checks, long time analyses, etc. With this in mind, it believes that the required sheets in the A to K series should be continued in the next decade. The experience of the past decade shows that some revision should be made in the present form. Careful study is required to determine desirable changes. The Committee suggests that the Forester appoint a standing Committee representing the administrative organization in the fire Districts and the Experiment Stations to consider this matter and prepare revised forms ready for field use not later than January 1, 1931. This Committee might well consider desirable changes in other Service-wide fire forms and records.

Topic 19. Inspection.

1. Prevention and Presuppression.

It is the responsibility of each District Ranger to know his risks and hazards and initiate practicable steps to reduce them; to insure adequacy of equipment through necessary checks and otherwise. One of the Supervisor's functions is to insure through thorough inspection that this responsibility is fulfilled and the same principle applies to the function of the District Office inspectors with relation to the Supervisor. Too often this function is imperfectly performed, and in spite of the emphasis long placed on inspection, fire losses still occur because of inadequately appraised hazards and deficient or superficial inspection. Existing standards and instructions are ample. The need is for more universal compliance, particularly by the higher administrative officers.

2. Suppression.

The most promising trend is the board of review method, which to be most effective, should be applied to the entire fire situation on a given forest in a given season, rather than to particular fire or groups of fires. The following are important: (1) promptness (at least within the same calendar year); (2) examining all facts available with the aid of an outline carefully prepared in advance; (3) representation by two or more District Office members, including the fire control officers and by one or more Supervisors. The same method should, to a wider extent than at present, be applied by individual Supervisors. In applying this method decided emphasis should be placed on arriving at and using means of eliminating future errors and reducing future losses—on comparable units as well as the particular units investigated. Where practicable the Experiment Station should participate in the Boards of Review.

The most important deficiency is partial failure to use the tools we have, well known standards of inspection and follow-up statistics as they picture the problem of a given unit, and individual reports as case records. The outstanding need is probably frequent restatement by the District Foresters of their administrative officers' responsibility for inspection and a current check of compliance. It is essential that not only physical factors but also human factors, including approximate human limitations as well as avoidable errors, be included.

An incidental benefit that should accrue from better inspection is a better picture, unit by unit, of the reasons why fires become large.

The Committee realizes that it has been unable to present a compre-

hensive review of this important subject and that there is a fertile field for the development of fresh and more effective inspection devices. The hope is expressed that fire research, especially on the D-5 experimental forest, will mean progress to that end.

Topic 20. Correlating allotments between fire control and other administrative needs.

The Fire Committee has not available sufficient data to suggest any specific methods for correlating allotments as between fire control and other administrative needs. There are some guiding principles which it believes should be incorporated in any plan of allotments whether in a single District or inter-district.

If we accept that successful fire protection in reduction of burned acreage to an acceptable minimum is the outstanding job in the Service, it automatically follows that allotments for fire control should have first priority.

The Committee has already established the fact that the fire problem must be considered unit by unit. It has classified the Forests into three general groups, namely, the critical, the marginal, and the acceptable. The job of converting the critical Forests into the marginal and the marginal into acceptable groups appears to us of paramount importance.

Priorities in the use of funds as between administrative and fire control must take into account just what will be secured in reduction of acreage burned.

If there are urgent administrative needs, we should be prepared to meet them by added appropriations or through other possible financial readjustments. The Committee recommends that diversion of fire funds to administrative purposes be held to the very minimum.

Topic 21. Recognition of preventable losses and their relationship to allotments.

The fire history of any National Forest District is undoubtedly replete with examples of large and disastrous fires which could not have been prevented by mere additional guards or money. Yet many of these fires could have been prevented entirely, or have been held to small acreage if the administrative organization had exercised better skill in recognizing the inherent fire danger in a given situation and taken steps to reduce and minimize these dangers. No formula or principle can be set up to prevent such occurrences. There are a number of things that can be done which will help materially. The Committee suggests the following.

1. Surveys of hazards and risks to be made annually by each National Forest to determine where dangerous fires may occur and means for their prevention. Once a dangerous situation is recognized, every effort should be made to curb the menace by the state or federal legal machinery. We have not used the injunction against the maintenance of nuisances, and the Committee believes we can go much further in this direction.

2. Annual analysis of all fires over 100 acres to determine what caused their size and means that could have been used for their prevention. The Forester's Office has already initiated this project—it should be carried forward.

3. In calculating acreage burned, for purposes of comparison with

allowable acreage burned for allotment purposes, fires which could have been prevented by other means than man-power in detection or control should be segregated and considered separately.

4. The necessity of getting things done with dispatch is of paramount importance, and requires the highest type of executive capacity. Important as it is to know the physical phases of the job, more emphasis must be placed on executive management if the fullest returns are to be secured from investment in money and men. This factor in the fire control job must be given utmost consideration.

Topic 22. Training.

The training of rangers in fire control is an important element in the general administrative training program, which, as the Training Committee has stated, requires additional funds. As to the funds at hand, since all Districts have substantially equivalent standards of special fire training, this item is considered as included in the proposed inter-district set-up. It then devolves upon each District to make adequate provision for training from funds available. As in other fields, the need of more fire training of and by Supervisors and higher executives is essential. This should be considered when measuring the overhead load.

On the part of District Officers directing fire control activities, wider knowledge and interest in improved methods, which they in turn can spread to the organization as a whole, is a valuable factor in fire training. The adoption of the Committee's suggestions for securing dissemination of ideas through inter-district field visits should therefore help to further the training program.

The active and enthusiastic participation of executives in thorough-going field demonstrations of better methods and equipment is one of the most valuable of the available means of overcoming inertia and perfecting technique.

The need for better executive management requires that this phase of fire control be given an important place in the training programs.

Topic 23. General Recommendations of the Fire Committee.

1. In order to set up any sound method for the distribution of funds, the following basic data are needed:

(1)

- (a) Type maps of fire Forests
- (b) Damage data by types
- (c) Area burned by types

(2)

- (a) Hour control standards by types
- (b) Transportation studies (Norcross method) to determine best means of attaining hour control

(3)

- (a) Revision of forms to provide records for these data.

We consider the need for these basic data essential for the intelligent handling of the fire problem. Both the administrative and research organizations will have to contribute to these studies. In drawing up the fire research program, these important needs should be given careful consider-

ation. Both as a matter of training and an aid in hastening the progress of the studies, the forest personnel should be drawn into the work as fully as practicable.

2. The Committee recommends that the proposed methods for the distribution of funds submitted in its report be used tentatively as a basis of allotments.
3. The Committee heartily endorses the new work contemplated in fire research on the Shasta. It is particularly impressed with the promising and intimate correlation of the work between the administrative and research organizations.
4. The Committee urges that the Norcross and Loveridge Studies be prepared for early publication. These two excellent contributions should have wide distribution among the profession and the schools.

Comment:

Report is approved. In giving it approval the following comments are made by way of emphasizing recommended action in connection with certain of its more essential subjects.

(1) The Districts are urged to collect and record the best possible information on the extent and location of Forest types.

(2) It is recognized, of course, that the permissible "area burned factors" by forest types are tentative. Looking ahead toward the establishment of more dependable figures for given types or special classification other than type descriptions, it is urged that the District continue to exploit this subject both administratively and from the research standpoint. The area burned factor may vary greatly for the same forest type due to local influences such as recreation values, watershed protection or soil stabilization considerations. Certain obvious differences are noted in the present figures; for instance, the permissible loss in the lodgepole type on the Salmon River drainage of District Four on the basis of the differential of 6 as compared with white pine, while that in District One is calculated on the basis of 10. If 10 is acceptable for west side condition in District One it is equally so on the Salmon River watershed of District Four. Again, the same factor is applied to the lodgepole in the Salmon River watershed as on the east side forests of District One or District Two. These differences should be reconciled.

(3) As stated in my comment on the Improvement Committee report, it is hoped that the basic hour control studies and the transportation study may be pushed as rapidly as possible wherever the District Foresters feel that such studies are needed. This in practice will require that these studies be called for where a fire control organization supplemental to the yearly force is employed. These studies are necessary to determine the required intensity of fire control financing.

(4) The determination of hour control needs based upon requirements of the average "so called bad year" is approved.

(5) The recording of area burned by forest types and the setting up of acceptable area burned by types is an important step ahead.

For purposes of future study of records it is important that fire reports clearly indicate all "C" fires that became so because of preventable human blunders.

(6) The consideration of the size of the fire control problem in the respective Districts based upon study of individual Forests is most helpful to this office. It is urged that the Districts check the three way classifications as have been made of the Forests, and consider if the determination of the fire load should not include number of fires and other factors as well as the percentage of area burned by forest types. The conclusions in this field have an important bearing upon fire control allotment thinking.

Statistical Records.

Within a few months the personnel of the recommended committee will be announced. It will probably be appropriate for this committee to undertake as one of its functions some rather urgently needed steps in the additional standardization of fire equipment as well as to go into the revision of fire forms and records.

At the time the above committee is selected consideration will also be given the recommendation for an advisory committee on fire investigation. Possibly the same Forest officers should serve on both committees.

Survey of Hazards.

Prevention should be dealt with on a scale sufficiently broad to insure that the more difficult risks, as well as the easier reached ones be definitely attacked. This office will do all within its power to support the District Foresters in their attempt to abate through court action nuisances, such as by railroad and lumbering operations, where other means have failed. Our responsibility for preventing disaster is as real as that of dealing with them after their inception. We should go to the limit possible under the law to minimize the master risks and to hold any situation in hand.

Inspection.

As stated also in my comments on the report by the Inspection Committee, too much emphasis cannot be placed on the necessity for continuing inspection on a high standard in all classes of work. This is particularly so in the various phases of fire control effort starting with the ranger's inspection of his own work and that of his guards. If all rangers and supervisors would meet their responsibilities for real inspection, the necessity for inspection by District Office overhead would be greatly diminished. Important in securing desired results from inspection is the requirement for immediate correction of avoidable deficiencies and the follow-up in personnel action if failure should continue in those fields well within control of administration to correct.

The Board of Review idea with appropriate follow-up has the full endorsement of this office. Its application should become an established Service-wide practice.

The Place of Management in Fire Control.

The grade of executive performance largely determines what

men and money will return in terms of fewer acres burned. Some Forest officers believe that fully 75 % of a given fire control job involves the various elements that go to make up executive management, i. e., that the ability to get the most out of available resources has a greater bearing upon the degree of success attained than the scope of the resources itself. Much evidence is at hand to support the validity of this view. The force of the argument can be admitted without diminishing at all the relative need for more study on other phases of the problem. They are all important. I am inclined to emphasize the importance of executive performance even to a greater degree than indicated by the committee; and to stress the subject of executive management in the fire control training courses for rangers and their ranking officers.

R. Y. S.

Topic 24. CLASSIFICATION OF FORESTS FOR FIRE CONTROL NEEDS.

Dis.	Forest	ACCEPTABLE			Forest	MARGINAL			Forest	CRITICAL		
		Prot. Area	Objec- tive	Actual Burn		Prot. Area	Objec- tive	Actual Burn		Prot. Area	Objec- tive	Actual Burn
1	Absaroka	817000	6643	216	*50 pct.				Blackfeet	1044000	6216	34736
	Beartooth	582000	5493	2	*Cabinet	993000	3208	1924	Flathead	1883000	9579	39922
	Beaverhead	1263000	8820	82	*Lolo	1169000	5399	2858	Kootenai	1603000	8792	10967
	Custer	678000	4856	157	*Nezperce	1670000	10228	16037	Pend Oreille	801000	3217	26101
	Deerlodge	897000	5281	1567					Clearwater	895000	2876	10375
	Gallatin	855000	6088	6					Coeurd'Alene	781000	1573	15384
	Helena	853000	5974	1393					Kaniksu	616000	1512	62272
	Jefferson	1045000	6301	934					St. Joe	874000	3179	14830
	Madison	909000	8734	46					Selway	1765000	10597	35478
	*Bitterroot	872000	7000	2474								
	Lewis&Clark	769000	7254	1401								
	Total	9671000	72444	8278		5184000	30525	25342		10262000	47540	250115
	Per Cent		.76	.09			.59	.50			.46	2.47
2	Arapaho	615603	2609	253	†Nebraska	206026	16	6027				
	Cochetopa	724753	1629	86	Wichita	61480	907	524				
	Colorado	688076	2847	211								
	Grand Mesa	289584	160	12								
	Gunnison	725981	1606	10								
	Holy Cross	766643	2077	78								
	Montezuma	392447	636	25								
	Pike	967657	2132	155								
	Rio Grande	624137	802	2								
	Routt	646451	2349	41								
	San Isabel	441550	755	76								
	San Juan	780955	1464	234								
	Uncompahgre	446389	487	3								
	White River	461227	907	41								
	Big Horn	683656	2917	5								
	Med. Bow	620022	3068	15								
	Shoshone	368000	2964	2								
	Washakie	460409	2172	24								
	Black Hills	569054	1627	201								
	Harney	457540	1355	173								
	Total	11730134	34563	1647		267516	923	6551				
	Per Cent		.29	.014			.34	2.42				
3	Apache	910000	2835	700	Coronado	638000	4132	3780				
	Crook	406000	2588	787	*Gila	866000	3060	2000				
	Prescott	316000	1695	650	Lincoln	395000	1398	500				
	Sitgreaves	490000	1455	421	*Coconino	863000	3082	820				
	Tonto	530000	2550	442								
	Tusayan	400000	1200	149								
	Carson	500000	1460	195								
	Datil	812000	2418	3000								
	Manzano	162000	486	200								
	Santa Fe	982000	2707	518								
	Total	5508000	19394	7060		2762000	11672	7100				
	Per Cent		.35	12			.42	.27				

*Consider as "Critical" for road and trail funds.

†Protection actually given only to plantations. Must protect large area by fire breaks surrounding plantations—special problem.

CLASSIFICATION OF FORESTS FOR FIRE CONTROL NEEDS

ACCEPTABLE					MARGINAL				CRITICAL			
Dis.	Forest	Prot. Area	Objective	Actual Burn	Forest	Prot. Area	Objective	Actual Burn	Forest	Prot. Area	Objective	Actual Burn
4	Cache	Humboldt	Targhee	Minidoka	*Challis	1190230	5787	7361	None			
	Caribou	La Sal	Toiyabe	Teton	*Idaho	1838522	8468	2042				
	Dixie	Manti	Uinta	Wyoming	*Salmon	1495374	6320	11779				
	Fish Lake	Nevada	Ashley	Wasatch	*Payette	1216858	5272	1678				
	Kaibab	Powell	Lemhi	Sawtooth	*Weiser	555799	1774	1308				
	(No Increase Needed on above Forests)				*Boise	942024	3189	569				
Total						7238807	30810	24737				
Per Cent							.42	.34				
5	Inyo	750000	4750	1500	Eldorado	684000	1638	3120	Angeles	691000	3110	8020
	Mono	968000	9416	940	Modoc	1476000	3752	4540	California	1063000	3076	10840
									Cleveland	566000	3037	19680
									Klamath	1668000	4700	30820
									Lassen	1282000	3612	20300
									Plumas	1439000	3221	31000
									SanB'd'n'o	804000	4141	12490
									San.Barb.	2019000	12583	21470
									Sequoia	1304000	3130	25860
									Shasta	1630000	3420	20520
									Sierra	846000	2442	19430
									Stanislaus	763000	2026	30490
									Taho	950000	2090	21220
									Trinity	1674000	3793	12310
Total						1718000	14166	2440		16699000	54381	284450
Per Cent							.83	.14			.32	1.72
6	*Cascade	1068000	2214	562	*Rainier	1425000	4327	1917	Colum.	919000	1543	8644
	Malheur	1263000	2814	440	*Santiam	677000	1005	1330	Mt. Hood	1316000	1961	6400
	Wallowa	977000	4946	1000	*Umpqua	1211000	2536	3180	Mt.Baker.	1068000	4533	12378
	Whitman	1470000	5684	1315	*Crater	1148000	2691	2750	Olympic	1361000	4323	7770
					Deschutes	1464000	4980	2870	Siskiyou	1669000	6963	12500
					Fremont	936000	2880	3500	Chelan	1594000	4952	38650
					Ochoco	826000	1652	1920	Colville	809000	2388	31100
					Umatilla	1359000	4186	5500				
					Wenatchee	1183000	3286	2840				
					*Snoq'l'e	988000	2250	4300				
					Siuslaw	816000	1224	3530				
Total						4778000	15658	3317		12033000	31017	33637
Per Cent							.32	.07			.25	.26
7	Alabama	125203	626	139	*Allegheny	344521	596	2362	Choc'chee	184449	1798	2296
	Nat. Bridge	162000	745	367	Cherokee	367053	1981	1898	†Kisatchie	75000	1020	†1020
	Shenandoah	446715	2055	661	Monogahela	243904	488	530	Ocala	158731	1588	6177
	White Mt.	515825	658	9	Nantahala	268298	1408	1224	†Osceola	115000	1092	†1092
					Pisgah	286000	1259	1996	Ouachita	766380	5242	8676
					Unaka	200053	880	2218	Ozark	349731	2063	4024
Total						1249743	4084	1176		1709829	6612	10228
Per Cent							.33	.09			.39	.60
8	Given separate consideration											
9					Chippewa	313000	700	1773	Keweenaw	162000	713	no data
					*Superior	1654000	4168	9476	Huron	553000	3659	20440
									Marquette	305000	1191	no data
									Oneida	141000	432	
									Moquah	111000	824	" "
									Mackinac	270000	662	" "
									Flambeau	157000	552	" "
Total						1967000	4868	11249		1699000	8033	
Per Cent											.47	
							.24	.57				

*Consider as Critical for road and trail funds.

†Just organized. No "Actual Burn" figures available. "Objective" used.

CLASSIFICATION OF FORESTS FOR FIRE CONTROL NEEDS — SUMMARY

ACCEPTABLE					MARGINAL				CRITICAL			
Dis.	No. Units	Prot. Area	Objective	Actual Burn	No. Units	Prot. Area	Objective	Actual Burn	No. Units	Prot. Area	Objective	Actual Burn
1	11	9,671,000	72,444	8,278	4	5,184,000	30,525	25,342	9	10,262,000	47,540	250,115
			.76 %	.09 %			.59 %	.50 %			46 %	2.47 %
2	20	11,730,134	34,563	1,647	2	267,516	923	6,551	None			
			.29 %	.014 %			.34 %	2.42 %				
3	10	5,508,000	19,394	7,060	4	2,762,000	11,672	7,100	None			
			.35 %	.12 %			.42	.27				
4	20	Not listed			6	7,238,807	30,810	24,737	None			
5	2	1,718,000	14,166	2,440			.42 %	.34 %				
			.83 %	.14 %	2	2,160,000	5,390	7,660	14	16,873,000	54,381	284,450
6	4	4,913,000	15,658	3,317			.26 %	.35 %			.32 %	1.72 %
			.32 %	.07 %	11	12,408,000	31,017	33,637	7	9,572,000	26,663	117,442
7	4	1,249,743	4,084	1,176			.25 %	26 %			.28 %	1.60 %
			.33 %	.09 %	6	1,709,829	6,612	10,228	6	1,649,291	12,803	23,285
8							.39 %	60 %			.77 %	1.41 %
9					2	1,967,000	4,868	11,249	7	1,699,000	8,033	Data
							.24 %	.57 %			.47 %	incomplete

**STUDIES, DEVELOPMENTS WORK (EXCLUSIVE OF IMPROVEMENTS),
EXPERIMENTAL WORK, TIMBER STAND IMPROVEMENT; EXTEN-
SION WORK (INCLUDING COOPERATIVE FIRE AND PLANTING);
DEMONSTRATION FORESTS; PLANTING; RECONNAISSANCE,
MANAGEMENT PLANS, TIMBER SALES.**

Topic 14. Studies and development work considered here include only the following activities:

- (1) Studies, including silvicultural and products investigations, fire studies, grazing investigations and other administrative research such as invention of new tools, time and organization studies.
- (2) Reforestation and nurseries.
- (3) Timber stand improvement.
- (4) Management plans.
- (5) Timber survey.
- (6) Range survey.

Topic 14a. Studies.

There are many research problems crying for solution on every ranger district. While failure to apply existing knowledge is a most urgent problem, it is not at all uncommon to find resource management badly handicapped because of lack of scientific knowledge and there are many instances where administrative men are handling resources by methods based upon guess or opinion.

The Branch of Research now has experiment stations covering most of the United States. They are working on many projects, the results of which will be applicable to National Forest practices. The research men now do much of their work on broad and often fundamental problems applicable to wide regions. It will take years to solve many of these problems and in the meantime, the administrative organization needs more scientific bases for intelligent action in handling National Forest resources as well as for adapting broad principles to local variations.

Many of the more restricted studies are not so much research as they are the gathering of facts concerning definite local problems for immediate administrative application. They supplement administration by giving a better basis for action pending the time that the results of intensive and thorough research become available. These studies must be undertaken by the administrative organization if they are to be done at all.

In addition, if the administrative organization is to carry out the results of research it must have some training in research methods as well as an appreciation of the difficulties of developing scientific facts. These can be secured best by actually doing some investigative work, even though it is of more value for training than for the actual results secured. Very often, also, plots for studies, thinning and the like can be so located along roads or other places used by the public as to give them an immense public relations value.

Too often, after results of broad regional studies have been secured, it takes years to persuade private individuals to put them into practice. On the other hand, studies, even though more or less local in character, the results of which are directly applicable to the National Forests, can be

immediately applied there to large scale operations both for the better administration of the Government's property and to serve as demonstrations for other forest owners. Here is the ideal field because of permanency of ownership and the good protection afforded. It follows that much of the work of the Branch of Research should be directed toward helping the National Forests solve their problems.

There are some more or less local projects which are of vital importance for better National Forest administration but which are large and costly or for which results can not be secured for some years. The administrative organization generally has neither the time nor the funds necessary to undertake such projects while at the same time they do not well fit into the broad and fundamental research program of the Branch of Research. Some work of this character has been undertaken by Research and the National Forest administrative organization appreciates the assistance which the Branch has given it. The need for fundamental research and the responsibility of the Forest Service for research applicable to the forests of the United States as a whole are appreciated, yet it is the opinion of the Committee that the application of more funds and time to problems (even though local in character) directly affecting the National Forests will benefit not only the Government's own property but also forestry as a whole. There may be no need for a radical revision in Forest Service research programs, but there is need for a better balance between projects of a broad regional and fundamental character and the more local projects directly applicable to the National Forests.

Both to solve local problems and to train personnel, it is necessary that some studies be continuously in progress on each forest and ranger district, the nature of the work depending on the most urgent problems needing solution on the particular unit as well as on the interest and aptitude of the forest officer. In fact, a study of some kind by each man in the organization should be encouraged. Accordingly, the policy of having each ranger and each man on the supervisor's staff carry on some studies as a part of his regular duties is suggested as standard practice.

Much of this work can be done out of peak seasons. For instance, it is practicable to carry on at that time a great many silvicultural studies such as thinning, growth studies and sample plot work. Where, however, important local studies work is seasonal, such as many of the grazing studies, time must be made available for them even during peak loads.

The failure to secure as much administrative research as desirable is due not so much to lack of time as to failure to create interest on the part of rangers, lack of vision and failure to supply the necessary push both in the supervisor's and the district offices. In making this statement we are not unmindful of the fact that a great deal of this work is now going on, but it should be further extended and systematized in order to make it more effective. Intelligent direction must be exercised from the top and interest must be shown in it by all personnel. Manifestation of interest must be displayed by district office men, by supervisors and especially by district foresters, when in the field, to the extent of making inquiries about it, seeing the work and discussing it with rangers even though it may be outside of inspectors' particular lines. This work is regarded as of high priority. In order that it may be put on a sounder foundation, it is

suggested that one or several men be designated in each district office to head it up and correlate the work on and among the forests. This will not ordinarily mean additional personnel in the district offices, but rather the concentration of the supervision in one or two men.

It is important that the results of studies be made available for use where applicable and to this end records of the progress of projects must be kept. When results are secured, they should be written up in suitable form for distribution either to other forest officers or to the public. Inspectors should continuously urge publication of results of interesting studies by forest personnel.

Except in District Seven and Eight, there are District Investigative Committees which meet annually to give group consideration to research programs. Through them, the administrative viewpoint should be injected into the programs. In Washington, however, the field recommendations are acted upon by the Branch of Research and the other branches do not function as correlating agencies. The programs with comments are routed through the other branches but according to the testimony of two Assistant Foresters there is not time for consideration in their branches. Under this system the research work most vital to the proper administration of the National Forests is subject to veto of a branch whose interests extend far beyond the limits of the National Forests. We, therefore, strongly urge that the Forester develop ways and means for group consideration of research programs in his office, and that all of the Branches actively participate in these group meetings.

Comment:

The District Investigative Committees are designed to bring about a proper balance between research projects intended primarily to solve problems on the National Forests and other projects. It has been my impression that the Committees functioned satisfactorily in this connection; also, that most of the research projects in the Western District apply to both National Forest and private land. If these assumptions are not correct, the situation should, of course, be remedied. I am not prepared to issue a general instruction that a greater portion of Branch of Research work should be directed specifically toward solving national forest problems. I believe that the proper balance is a matter for determination within the several Districts. I would like to have the District Investigative Committees give this question particular attention at the time of their next meetings. District Foresters should then make definite recommendations for such modifications in the District Investigative Committee programs as they think desirable.

The Committee report emphasizes the need of more research, study, and investigation. It points out that the time and funds of Research are being applied to the larger problems which will require many years to solve. In the meantime there is urgent need for gathering and interpreting facts to aid in the solution of every-day administrative problems. The question involves getting better use of all men and money in an organized attempt at uncovering these facts and training our personnel. In order that this may be done it is desirable to define the character of research projects, biological,

administrative and others, which may be undertaken by the administrative men. These are:

- (a) Projects of purely local nature involving the application of the results of research.
- (b) Projects of local nature involving readily determinable facts necessary to immediate application in administration.
- (c) Projects of local nature the results of which may be applicable Service-wide or to regions and which cannot be undertaken by Research for some years.

The Committee's recommendation that each District formulate a plan of administrative studies is approved. In the formulation of the program advice and assistance also will no doubt be secured from the District Investigative Committee and experiment stations. I would suggest, however, that each Branch be held responsible for initiating and directing the work needed for development along lines for which it is responsible. In addition one individual should be designated to assist in actual planning and execution and in correlating the activities of all Branches.

If this suggestion is adopted, I can see that this officer has an interesting, broad and fruitful field ahead of him. Possibly he should follow the practice developed in the Branch of Research of requiring a program of the desired, pointed and reasonably attainable studies work on each administrative unit and a work plan, simple as it may be, for each project before starting it. The outlines for the programs and work plans and the form of permanent records are important steps which the "Liaison Officers" in each Region might well agree upon. He surely would facilitate close relations between the Research and administrative organizations and see that the more easily applied technique, good methods, *greater accuracy* and *permanent records* in ordinary use by the experiment station men become a common part of the studies work done by administrative officers. He may find projects or parts of projects which the administrative men can handle which will forward some of the main investigations of the experiment stations. He may develop leads on his study work which will justify the Branch of Research undertaking a project on a more intensive basis. Among other lines of activity he also may arrange for interest to be maintained through possibly incidental, but purposeful field checks of the projects by members of the experiment station, District Foresters' and Forest Supervisors' offices.

The administrative branches in the Washington office will be responsible for coordination of work among the Districts and for keeping the Branch of Research informed on the work being and to be done and the results accomplished.

All-Service Project 7 in the 1930 Plan of Work for the Washington office is so worded as to make the above possible and to secure the proper correlation among Branches as recommended by the committee. This Project is: "7. Integrate research and administrative functions and results; encourage and guide administrative officers in the application of research methods to their current administrative work and functioning.—Munns, Loveridge, Hill, Fitzwater, and

Morrell, in cooperation with Districts, under leadership of Sherman. See also Project No. 2 under Operation; Project No. 8 under Range Management; and Project No. 5 (3) under Research." Branch Chiefs will of course serve on the above committee at times instead of the assistant chiefs here designated.

R. Y. S.

Topic 14b. Reforestation and Nurseries.

Where planting methods have been developed to the extent that reasonable success can be secured and where it is necessary to reclaim devastated areas, it is desirable that rangers participate in this activity. This activity should be placed upon the same basis as timber sales, i. e., the rangers should be in charge of all planting except on very large areas which may be handled by specialists on a project basis. Ordinarily, planting must be considered as a part of the recurrent work on the ranger district even though it must be done in the peak season. Only the very small planting projects should be undertaken by rangers single-handed or without supplemental labor. Larger ones should be handled with labor under competent foremen under the direct supervision of the district rangers except in the case of the very large projects. This will mean that more planting work will hereafter be supervised by rangers. Labor and other costs of planting should be financed from the planting appropriation, except that rangers' time and incidental expenses should be contributed. Rangers should establish small plantations especially in denuded places frequented by the public in those regions where planting is feasible. These small plantations react favorably on the man and the public as well.

In general we are opposed to ranger nurseries because the growing of proper planting stock is a highly specialized art which can be done more efficiently and more cheaply in large nurseries by specialists. It is far better to furnish rangers with first class planting stock which can be field planted in one operation than to have them attempt to run nurseries which require rather close attention throughout the year.

Topic 14c. Timber Stand Improvement and Protection Other than Fire.

Most of the work so far done on this activity has been insect control. In addition, some silvicultural improvement work not in connection with sales has been accomplished. Further timber stand improvement work should be undertaken especially when it can be done outside of peak season.

Rangers will make observations for "red-tops" in connection with all trips about their districts. Special trips will be taken for observations where otherwise country will not be covered at the proper time or sufficiently. Control work when not on a project basis will ordinarily be done by small crews under the supervision of rangers. In areas where insect conditions are not too far advanced, rangers will treat, when found in connection with other work, such infrequent trees as are infested with *strong broods*, and which are so located that they cannot be handled promptly under administrative use, or economically treated later with the help of laborers. Rangers will be assigned to large projects on their districts.

Insect control work is of high priority and sufficient time must be set up to do it at the proper season of the year.

Comment:

The foregoing statements regarding planting and insect control are approved. As the reports state, participation by rangers in this class of work is very desirable. Some clarification of the policy as to direct action by rangers may be needed in regions where very large infested trees may be encountered.

It is recognized, of course, that the duration of the period of the ranger's assignment to project crews will vary with the pressure of other high-priority current work such as guard training.

R. Y. S.

Topic 14d. Management Plans.

Resource management plans must ordinarily be prepared by supervisors of members of their staffs with the help of district rangers. A large amount of material for such plans and most of the information necessary for their revision can be and should be collected by rangers or other forest personnel. Much of this work is incidental off-season work. There is generally time for this work if the proper direction is given by the supervisor's office. This activity is of high priority and must be carefully programmed as a regular part of the job load of the forest personnel. In many cases as for instance where timber estimates, or grazing surveys of large areas must be made, the basic information required as the foundation for plans must be secured on a project basis financed by special allotments. Ordinarily, however, the actual preparation of the plans, their revision and the collection of the information needed for revisions can be undertaken by the regular personnel without special allotments.

Comment:

Noted.

R. Y. S.

Topic 14e. Timber Surveys.

Timber survey work in connection with timber sales and management plans is an essential part of the regular work on the forests. Such work must be done by the regular personnel except for the larger projects to which the portion of the reconnaissance fund available for timber surveys is devoted. It is essential that timber survey work be programmed in the work plans and, where possible, work of this character should be undertaken outside of the peak season.

Comment:

Noted.

R. Y. S.

Topic 14f. Range Survey.

Range survey should usually be done on a project basis. The training of rangers in better resource management will be facilitated by their assignment to range survey under the leadership and direction of qualified technicians.

Range survey performed independently by a ranger should be done only:

1. After the ranger has received training and is fully qualified to perform the work in accordance with Service standards.

2. Where the ranger is qualified to perform certain portions of the work without previous training on survey projects and where definite plans have been approved by the District Forester.

Comment:

Approved.

R. Y. S.

Topic 15. Timber Sales.

The present well-established Service policy that no sales shall be made unless they can be properly administered needs no change. It cannot be emphasized too strongly that the condition of sale areas will be an important criterion in future judgments of Forest Service management of the National Forest properties.

Needs for men and funds which can be anticipated two years can be met by Congressional action. District foresters must decide priority in the use of their available resources, in meeting situations of more immediate urgency which require additional personnel. We do not believe that a more restrictive Service policy should be set up for their guidance.

The Committee has no substitute for the present method of an annual cast-up of future business and needed personnel as a basis for additional funds. It must be recognized that there will always be difficulty in forecasting needs for a growing activity which fluctuates as much as the timber sale business does and that, therefore, both additional funds based upon best possible forecasts of business, as well as versatility and skillful management of available resources will be required. It is believed that as the actual cut on working circles approaches the allowable cut, this difficulty will become less and less.

There will be instances of requests for timber sale funds from districts which at the same time are making expenditures on other activities which other districts are not able to make. We cannot produce a formula for handling such cases. Proper correlation in the Forester's office with due consideration of priorities will tend to eliminate such inequalities where they exist.

Proper costs of the various elements of timber sale work, such as marking, scaling, and brush disposal should be ascertained by

- (1) Establishing acceptable qualitative standards applicable to the particular type or character of timber, and
- (2) Determining through tests and time studies, quantitative or time standards based upon them.

These standards should be used as a check in determining the volume of business in a ranger district, and in the allotment of men and funds. Wide variations from acceptable cost or time standards should be investigated and when found unjustifiable, corrected by administrative action.

There are some 30 activities. They fluctuate from year to year, but the cost of most of them is increasing. Some increase fast, others slowly. The result under the present method of financing is inevitably that the more rapidly increasing activities finance a part of the others through diversion of funds. The alternative under this system is to ask for small increases for most or all of the activities from year to year.

In the past five years Grazing Administration direct costs have increased \$92,000, Special Uses, \$30,000, Fish and Game nearly \$7,000 (only to mention a few). It would probably have been impracticable to have gone after special funds for these activities as well as for 20 or 25 others. National Forest business is too complicated to divorce all other activities from any particular one in talking of increases or reductions. Obviously, therefore, the method of financing each activity through direct appropriation for it alone is too cumbersome to handle.

The more logical way of approaching the subject, in our opinion, would be to attempt to secure increases for the administration as a whole, supporting requests with a showing of increase in job load which is made up of all the activities of the National Forests.

The Committee does not pretend to be versed in legislative affairs. It does not know what difficulties such a course would meet in Budget Bureau or Congressional hearings. It contents itself, therefore, in pointing out the dangers of the present method and in suggesting a possible way out.

Comment:

I am very glad to receive the Committee's suggestions on this question, which is a complicated and difficult one. Since our activities are well known to the Budgetary authorities, requests for increased funds must be specific and well supported. Administratively, of course, the lump sum appropriation with consequent flexibility is preferable. We shall strive for more flexibility. The use of the job load may be the best means.

R. Y. S.

Topic 16. Invention and Experimental Work.

In an organization as large as the Forest Service with such a diversity of knowledge, training, and experience in its personnel there must be an enormous potential mental resource, which if called into action and properly directed will meet the recognized need for the development of ideas, methods, tools and equipment. Forest officers should, therefore, be encouraged to devise new methods, tools and the like. A reasonable amount of time and money should be made available for such development work most of which can be done outside of the peak season.

Specialists should keep in touch with private concerns which are engaged in similar lines of work or which are making tools and equipment suitable for Forest Service work in order that they may keep abreast of the times in connection with new developments.

The Forest Service should undertake to develop promising leads only in cases where it is not possible or practicable to secure the cooperation or assistance of private concerns which are specializing in work of similar nature or are better equipped than the Forest Service for carrying on such work.

Annually, information relative to inventions and the results of experimental work should be assembled and made available in written form for the Service as a whole. A special edition of the Service Bulletin is suggested as a medium.

Comment:

Approved.

R. Y. S.

Topic 17. Cost Studies.

Cost or time studies are necessary to establish and correlate standards of quality and quantity. These standards may be used as a basis for checking accomplishment. They do not give a true or accurate basis for comparison of efficiency as between different units unless all other pertinent factors are taken into consideration.

Cost studies which indicate the trend of costs on a particular forest or ranger district over a period of years, together with studies of the variations in conditions throughout the same period, are of particular value to supervisors in determining the need for more detailed study of the effectiveness of the use of time and funds on the unit under consideration.

Time studies on ranger districts are especially needed in order that plans may more truly forecast the time required to handle the jobs of the district. Similarly, time and cost studies for forests as a whole or the work in the Supervisors' offices are also needed. We believe that a systematic effort should be made to secure more accurate time and cost requirements on forest jobs. Much of this work would merely require keeping accurate time records of jobs which are being done to required standards.

Hand in hand with securing additional time and cost records, should go the further use of those data now being collected.

Comment: Approved. R. Y. S.

Topic 18. Use of Clarke-McNary Funds.

District foresters and others in the administrative personnel in the district in the regular course of their jobs must supervise the work of a number of activities for which special appropriations are made. The regular S. & E. appropriation is provided for this purpose. For this reason, the cooperative fire appropriation for the Clarke-McNary activities should not be used to finance salaries or expenses of officials who in the course of their other duties supervise this work.

Members of district or forest organizations should be financed from Clarke-McNary funds only during periods when they are taken from administrative work and assigned to Clarke-McNary work, (provided that such assignments aggregate two months or more during the year, either for one or several men).

The travel expense of special trips on Clarke-McNary work may be met from Clarke-McNary funds regardless of who makes the trips, provided that Clarke-McNary funds are available.

Comment:

I concur in the first paragraph of the Committee's report regarding the use of Clarke-McNary funds, but the following policy statement is substituted for the last two paragraphs: In Districts where the Clarke-McNary work does not require the major portion of the time of one employee but where there is Clarke-McNary work of high priority that should be done, Clarke-McNary funds should be allotted to the District to cover the salary and expenses of a designated employee for the time necessary to properly supervise the work. The travel expense of special trips on Clarke-McNary work may be met from Clarke-McNary funds regardless of who makes the trips, provided the man or men whose salary and expenses are

paid from Clarke-McNary funds do not during the fiscal year compensate for such expense by contribution of time to other activities.

R. Y. S.

Topic 19. Development Work in the Slack Season.

"Is there a tendency for high priority studies and development work to get crowded out by non-essential or low priority routine?"

Not sufficient evidence is at hand to show the relative consideration given to studies and development work in contrast to low priority routine during the off-peak season. A review of a number of the ranger districts analyses, however, shows less than full loads for some of the months as well as such off-season jobs as making sign boards, getting up fuel, hauling forage, caring for Government horses, headquarters improvements, overhauling road equipment and sharpening tools on more or less of a project basis. Little or no studies and development work was found in the off-season in the reviewed analyses.

Possibly the question is one not so much of crowding out of studies and development work as one of failure to consider it. At any rate, the Committee believes that leadership for studies and development work must come from the supervisor who should see to it that full consideration is given to programming work of this kind, especially during off-seasons. He must weigh the relative importance of this work and other jobs now set down for the winter or off-season.

Studies and development work are of higher priority than jobs of the character listed above which are good as fill-in jobs but which should be done by temporary labor to the fullest possible extent when rangers can be used on more important work.

Comment: Approved.

R. Y. S.

Topic 20. Game Management Policy.

"The use of Forest Service funds on special game patrol and the general direction in which the Forest Service is headed on game matters."

In considering this matter we have deemed it desirable to present certain principles of policy dealing with the general problem of land use as affected by the presence of game and fish and to ask your approval of the same.

Regulatory power for the protection and utilization of fish and game rests with the States except on certain National Game Preserves. The Forest Service, on the other hand, is charged with the responsibility of managing the forage and the watersheds within the National Forest upon which the fish and game depend. There is, therefore, need for the highest degree of effective cooperation between these two agencies in the administration of the interrelated resources involved.

Game and fish production is a form of land use which on many National Forests is now of great importance; on others its importance is growing rapidly. Our responsibility as manager of the lands and vegetation thereon within the National Forests is definite, and full recognition of this responsibility must be reflected in the cast-up of the size or load of administrative units and in the set-up of time or funds, to the end that this form

of land use will be kept abreast of the times and our responsibility redeemed.

The Act of May 23, 1908, provides that officials of the Forest Service shall in all ways that are practical aid in the enforcement of the laws of States and Territories in the protection of fish and game. We therefore, have not only the duty of aiding States and Territories in fish and game law enforcement, but the further duty of protecting the physical resources of the National Forest by proper correlation of interrelated uses.

Based upon the above statement we recommend that a statement of policy being prepared by Rachford be issued by the Forester, but, before final adoption, that it be referred to each District Forester for comment.

Comment: Approved.

R. Y. S.

Topic 21. General Contacts.

“Will viewpoints be broadened by more familiarity with current events, more association with men of affairs, with their interests and problems? Is there need for teaching intelligent use of time in this direction to guard against haphazard efforts? Do some men use too much unofficial time on official matters?”

It is highly desirable that forest officers broaden their viewpoint through familiarity with current events, association with men of affairs, and interest in the progress and problems of other organizations and private business. Except as outlined below, however, this should be a matter largely of personal concern on the part of each forest officer, and should be regarded in the same light as a general education.

Reasonable participation by forest officers in the life and activities of their communities has already been authorized and encouraged as a Forest Service policy.

It is believed that proper exercise of this privilege will give Forest officers ample opportunity to avoid becoming so engrossed in Forest Service affairs that their interest in, and knowledge of, outside affairs becomes narrow or restricted. Adherence to a well-balanced Public Relations plan will prevent going to extremes.

Aside from a reasonable participation in community activities, the use of official time in outside affairs should be limited to cases where there is a definite Forest Service objective which can be promoted best through outside contacts. The relative importance to the Forest Service of such an objective should govern the extent to which official time is devoted to paving the way for, and making the contact.

In so far as is practicable, the degree to which forest officers should participate in community activities and Public Relations projects, should be outlined definitely in work plans or job lists and time should be set up which will be commensurate with the need for doing the work. In doing this, it should be kept in mind that, unless a well earned reputation is established and maintained for efficient administration of the National Forests, there is a real danger that time and attention devoted to outside interests may create an unfavorable impression, the ill effects of which may outweigh the favorable results of the objectives in mind.

It should not be the policy of the Forest Service to have its members work under pressure to the extent that working overtime becomes a general practice. It should be, and generally it is recognized, that emergen-

cies frequently occur which cannot be handled within the limits of what is termed official time. A great many forest officers are also so situated, or their work is such, that they find it necessary or desirable to devote unofficial time to official matters. This is particularly true in dealing with forest users and the public. On the other hand, it sometimes is difficult to exclude personal matters entirely from official hours.

For these reasons, no definite policy is recommended other than that forest officers should be encouraged to secure wholesome recreation and relaxation during unofficial time, for their own good and indirectly for the good of the Service. Incidentally, reading and study of a general educational nature and community activities are suggested as profitable alternatives to Forest Service work during unofficial hours.

Many forest officers would have clearer vision and secure a better perspective of their jobs if they used some of their unofficial time in getting away from the job—both figuratively and actually.

Comment:

I know of no formula for general application in such matters of human conduct and self-improvement unless it be diligence, sincerity, human interest and perspective.

R. Y. S.

LANDS, ACQUISITION, RECREATION, TRAVEL ALLOTMENTS, PURCHASE OF SUPPLIES AND EQUIPMENT

Topic 1. Lands and Acquisition Funds.

Much of the exchange and acquisition work must be done on a project basis because of the size and importance of the transactions.

Lands and acquisition work in the smaller transactions should be incorporated in rangers' plans of work and time and expenses paid from S. & E. allotments except:

1. When the size of the job makes the setting up of a project the more economical method.
2. When there is recurrent work of a higher priority of sufficient volume to fully occupy the ranger's time and the volume of lands and acquisition work is sufficient to assign a specialist.
3. When skill or technical knowledge beyond the capacity of the ranger is required.

Project or special schedule funds should not be used for the payment of the salaries of heads of Districts and Branches unless there is a surplus of funds.

In allotting acquisition and lands funds the following priorities should be observed:

1. Project work.
2. Specialists when required.
3. General overhead salaries and expenses when over two months are spent on the work in any one year.

Lands and acquisition money will be allotted on the showing of needs in exchange and acquisition plans.

Comment:

All proposals and recommendations approved, excepting the recommendation which follows the numbered paragraph 3, first above. This subject is too complicated to generalize about in a brief paragraph.

R. Y. S.

Topic 2. Use of Acquisition Funds for Land Purchase in Western Regions.

Determination of the desirability of using purchase money appropriated by Congress for the purchase of forest lands necessitates the definition of Federal objective in forestry and a statement of the Federal policy either National or regional. Without attempting to define or state a policy, the Committee desires to raise the following questions which have not as yet as far as it knows, been determined: To what extent can the Federal Government predicate its policy upon the assumption of a part of the job by state or private agencies? Should the objective of Congress be to obtain by every possible means the maximum assumption of the work of timber production and watershed protection by other agencies? How much bearing should the increasing need of forests under public control for the social well-being of the American people have on the ultimate policy adopted by the Government? Should the policy vary materially as between the east and the west?

It is the belief of the Committee that all these questions call for a clarification and statement of the Federal Forest policy based upon a study of existing conditions and a forecast into the future in as far as this is possible.

The Federal program now set up in the west provides for the acquirement of an additional twenty million acres of land which will bring under Federal control about eighty per cent of the forest lands in that region. The net gain in area under the General Exchange Act has up to this time been 554,000 acres. Roughly, it is estimated that at the present rate of progress 100 years would be required to complete the program. It is estimated that increased receipts will cut the period required for completion to 50 years. Recent proposals indicate that this figure may be materially reduced under existing legislation by donations.

Just how far the time required can be further reduced will depend upon the progress of private and state forestry in the west and the Federal policy toward it. If owners of private lands give assurance that they will practice forestry on their holdings, it is the recommendation of the Committee that they be permitted to build up by exchange forest properties within the exterior boundaries of National Forests providing these lands are in such blocks as will not depreciate the value and usability of surrounding National Forest lands and the effectiveness of their administration, or that watershed protection or other public values will not be jeopardized. Under this policy it is believed reasonable to assume that the period required to accomplish the ultimate objective of acquirement of the acreage necessary to meet the situation in the west can be further materially reduced, possibly to a period of 25 years.

In contrast to the western situation where present plans call for the ultimate control by the Federal Government of eighty per cent of the forest lands, the present plans of the east call for the purchase of 4.3 per

cent of the total of 375,000,000 acres of forest lands east of the 95th meridian. The percentage of Federal land in the east should be considerably higher.

The major centers of wood consumption lie in the east. The vital need for accessible recreation areas is obviously in the eastern region. The extent of forest devastation and the denudation of watersheds on navigable streams have gone far beyond that attained in the west. The desirability of obtaining more general public understanding of the National Forest systems, the results of intelligent forest management and fire protection, and the needs of the National Forests point to the more urgent need of establishment of National Forest units and their consolidation in the east. The Committee believes that by and large the establishment and intelligent administration of the National Forest units in the east will reflect material advantages to the National Forest system as a whole because of the better public understanding that will be obtained.

Comment:

There is unquestioned need for the determination of the questions and formulation of policies suggested. Steps to that end were tentatively approved by the Conference of District Foresters with the Foresters and Assistant Foresters following the meeting.

R. Y. S.

Topic 2a. Economic Investigations.

The prospects of the extension of private forestry on an appropriate scale over forest lands in the west are discouraging and in some localities of several regions, prospects are remote; moreover, annually many of these forest lands are becoming gradually depreciated by lack of proper protection. This situation can be handled appropriately only by permanent ownership.

Since it is important that these lands be made part of the general scheme of the National program of forestry, then it is urgent that the whole subject of acquisition in the west be thoroughly investigated and a comprehensive program worked out. If the results of the study indicate that acquisition by purchase is essential to the National welfare, the matter should be brought clearly to public attention and the acquisition program and the financial plan therefore, should be revised accordingly.

The Exchange Act and the donation legislation, and the possibilities thereunder may not take care of the situation. Acquisition by exchange or donation alone will be too slow in certain regions.

There is no competition between the west and the east and competition should not be permitted to enter. Instead, if the western situation as proved by study merits treatment, attempts should be made to secure the necessary funds to make progress in the west on a scale commensurate with its indicated National significance.

Comment:

Proposals made obviously are desirable and Forest Service will proceed accordingly as rapidly as circumstances will permit. This ties in with the preceding subject.

So long as Congress and the Bureau of the Budget tend to consider all forestry appropriations in the lump—to gauge their ade-

quacy by the Departmental totals—competition between activities or regions is unavoidable. Our entire budgetary procedure begins with the estimated national income for the ensuing year and its equitable apportionment between activities. Extensive appropriations for Acquisition in the West probably would result in a reduction in the funds available for that work in the East. However, this fact does not prevent the initiation of a comprehensive study of the western situation, provided no concrete proposals or drives for Acquisition expenditures in the West are encouraged or initiated until there has been a deliberate determination by the Forester of their priority over the requirements of other regions.

R. Y. S.

Topics 4 & 5. Recreation Work Expenditures (exclusive of Fire and S. & F. P. Improvements.)

The investigations of the Committee did not indicate any unreasonable lack of correlation between Districts and Forests with respect to expenditures on recreation work. However, it did find a general deficiency in the handling of the work and in its recognition in allotment set-ups. The Committee believes that recreation resources should be recognized as an important resource of the Forest, and that these resources be treated accordingly. This recommendation is made in view of the evidence that the work has sometimes been slighted through failure to appreciate properly the values involved.

No allotment practice is prescribed by the Committee as being desirable, it being conceded that there is no other way than by knowledge of regional plans, conditions and requirements to obtain an equitable allotment distribution where it will do the most good.

The Committee recognizes the need of a recreation planner in the Forester's Office who can act in an advisory capacity to the Districts and obtain recognition of the soundness of Forest Service policies with respect to recreation in other agencies interested in recreation planning. The Committee finds no necessity for the employment of recreation specialists of the landscape-architect class in the Districts.

Comment:

Approved.

R. Y. S.

Topic 6. Allotments and Expenditures for Travel and Mileage.

Correlation and control of travel expenses can be obtained by analysis of plans of work and trip plans which should be uniformly required. Progressive travel for all classes of officers is the key to economy in expenditure of travel funds and should be a standard requirement in all Districts. Because of varying costs of living and conditions in different regions cost of travel and subsistence per day of field time means little except locally. In the judgment of the Committee excessive expenditures per day can and should be checked through administrative audit of vouchers which should be a uniform practice.

Evidence obtained by the Committee indicates clearly that use of privately owned cars on official travel varies to a marked degree with the likes and dislikes of individuals and their domestic environment, indicating

a need for more uniform practice and greater control.

The law authorizes the payment of mileage rate only "when the cost of travel may be reduced thereby." The Committee recommends that the District Foresters take steps to bring about more uniform compliance with the spirit of the law and the fiscal policy governing the use of private cars on official work.

The Committee recommends the same care and control for governmental cars as for the use of privately owned cars on a mileage basis.

Under the Act permitting authorizations of a maximum of ten cents per mile, the burden of proof showing costs over seven cents per mile rests upon the applicant. In case an applicant proves cost of operation over seven cents per mile, the cost will be reduced to that of the cost of operation of the most economical car adapted to the needs of the work. The elements of cost should be determined and prescribed by the Forester.

When records of use and cost of privately owned cars indicate that a financial saving or materially added efficiency will result to the Government, the Committee recommends that the policy be to furnish Government cars as rapidly as this can be financed.

Under the above policy when a Forest officer can be offered a Government car and he elects to continue use of privately owned car, he will be required to accept the reduced mileage rate.

Comment:

Approved.

R. Y. S.

Topic 7. Supplies and Equipment.

Evidence furnished the Committee clearly indicates that considerable saving has been made under the centralized purchase plan. It is the recommendation of the Committee that central purchasing be considered as desirable practice and adopted in as far as this is practicable.

It is the recommendation of the Committee that the Forester's Office investigate the advisability of abandoning or moving the Ogden Supply Depot and the establishment of a central purchase office and warehouse in San Francisco.

The Committee suggests the desirability of creating a purchasing board comprised of the purchasing agents at Denver, Missoula and San Francisco or Ogden, which board shall meet periodically to obtain proper coordination of the work and permit the maximum amount of pooling of orders in order to obtain the price reductions that frequently are available under this system.

The Committee recommends that purchase of equipment other than standard be kept to a minimum and that issuance of standard specifications for different types of equipment by Districts be made the general practice. The Committee suggests the desirability of further interchange of ideas between Districts as to desirable types of equipment under specific conditions.

The Committee suggests the desirability of having motor vehicles placed upon the General Supply Schedule.

Comment:

The last time the question of relocation of the Ogden Supply

Depot was considered the evidence was clearly in favor of leaving it where it is. However, there have been a number of changes in conditions since that time and the question of a possible better location for the Depot will be investigated as the Committee suggests.

If the present arrangement now under test, which looks to a continuous interchange of information and the making of purchases at the best prices does not meet requirements fully, the organization of the purchasing board as recommended will be in line.

Action on the recommendation as to standardizing equipment should be similar to that taken on the fire committee's report regarding the standardization of fire equipment.

The placing of motor vehicles on the General Supply Schedule would be a very desirable thing and if it worked right would provide a solution for acute problems of all Departments and Bureaus as well as the Forest Service. All efforts heretofore to put motor purchases on a better basis have gone up against insoluble difficulties. Fresh efforts will be made.

R. Y. S.

Topic 7a. Prison-made Tentage.

The cost of prison-made tentage runs 30 per cent higher than cost of tentage previously purchased by the Forest Service. However, the prison-made tentage is of finer quality than that generally purchased by the Forest Service and no figures are available as yet to determine whether the increased quality will counterbalance the increased cost. The Committee finds that the use of prison-made tentage is prescribed by the Budget Bureau and recommendations adverse to the decision of the Budget Bureau would be at this time of little avail. However, we recommend that the Forester be kept informed of the facts with regard to the economy of use of this tentage in order that appropriate action may be taken if conditions justify.

Comment:

Approved. The Districts are urged to obtain and submit specific data on this subject so that we will have adequate material on which to base appropriate action.

R. Y. S.

Topic 8. Legality of Specific Purchases.

While the Committee realizes that considerable difficulty has been encountered in connection with legality of specific purchases, it feels that the major portion of these will be eliminated if and when the limit on and requirement for bids is raised to \$500. Evidence obtained by the Committee indicates clearly that some difficulties have been based more upon preference for a specific type of equipment rather than a real need therefor.

Comment:

Noted.

R. Y. S.

Topic 9. Charges for Recreation Purposes.

The question of making recreation pay has been placed before the Committee. It presents many problems including public relations, ways and means, results, and so forth. The question involves making charges

for the use of public campgrounds, fees covering the entrance to National Forests for recreational purposes or charges in connection with specific scenic attractions.

It is the recommendation of the Committee that the present policy with respect to charges be continued, leaving general public recreation free and providing for payment where exclusive use is involved.

Comment:

Approved.

R. Y. S.

Topic 10. Term Permits.

It is the recommendation of the Committee that the Term Permit Act be amended to cover all uses and the acreage limit be raised to 160 acres. Evidence obtained by the Committee indicates that the development of the use business, particularly where cultural improvements are a necessity, will be facilitated by the recommended amendatory legislation.

Comment:

Approved.

R. Y. S.

Topic 11. Monopoly Under Use Permit.

The Committee does not recommend the granting of monopolies under special use permit except as now provided in the Manual. It is believed that where recreation plans are prepared and they should be prepared in all cases before permits are granted involving recreational use in any of its aspects, that reasonable protection for permittees in commercial business can be afforded. Regulation of charges, accommodations, and so forth, should be brought about by competition rather than by the regulation of a monopoly.

Comment:

Approved.

R. Y. S.

Topic 12. Scenic Value of Roads.

It is the belief of the Committee that insufficient attention has been given to the development of maximum social values in the road construction program of the Forest Service. The Committee recommends that where the general public will use the road, all surveys and locations should be made under a policy and under supervision that will assure that maximum social values are obtained when the value will be commensurate with the additional cost required.

There is a tendency in the Service to permit impairment of scenic and social values by defacement. The Committee recommends more rigid control and adequate protection of scenic values on highways during construction, maintenance and of permitted use.

Comment:

The recommendation is approved. Nevertheless I do not wish to overlook any opportunity to call attention to what I believe is a serious situation in respect to advertising signs, special use permits, etc., on road rights-of-way or conflicting with the full enjoyment of the

road by the users. Mr. Norcross discussed this matter at the meeting. The Forest Service policy in regard to roadside beautification, etc., should be thoroughly satisfactory in all respects and fully in accord with modern practices and standards. The Service is being accused, rightly or wrongly, of permitting defacement which would not be allowed by State Highway Departments, the Bureau of Public Roads and the National Park Service. We must take every action necessary to show that the Service is not antagonistic to the plans and ideals of others but is thoroughly sympathetic toward them.

R. Y. S.

TRAINING COMMITTEE REPORT PART I.

Topic 4. Review of Performance under Previous Programs.

Twice in the past has the Service considered training and set up a training program. First was the meeting at Mather Field in 1921. This meeting set up what it called a temporary and a permanent program. The temporary program was contingent on an appropriation that was not secured and therefore was not carried out.

The permanent program emphasized two things: First, group training of not less than three days for the temporary fire employees, and second, group training for probation Rangers. The first of these has been carried out almost one hundred per cent; one District has dropped back largely to two days and two other Districts do not always include all their men.

The second, group training for new District Rangers, has not been accomplished to the same degree. In four Districts this is standard practice and in four it is not; the ninth District has not yet organized this work. The need for this particular form of training seems to vary with other factors, particularly with the number of administrative guards and Assistant Ranger positions.

Five years later at the Denver conference, training was again discussed and a more comprehensive program adopted. This program emphasized the training of the men on the Forests. It reiterated the need for group training for beginners, but recommended it also for the entire Forest personnel. It also emphasized other forms of training such as inspectional contacts, study courses, assignments, etc. The extent to which this program has been carried out is difficult to estimate because of the great variation in Districts. It seems, however, to be not greater than fifty per cent.

To review briefly some of the things recommended: Advanced group training has been carried out in only three Districts. Guard training as given above is practically universal. In addition, there has been considerable training of special groups and some attempt at training cooperators.

Conferences for both Supervisors and Rangers have been used to some extent in all Districts. In addition, there have been conferences of special groups in some Districts.

Conscious training through inspectional contacts, emphasized in the program, has been almost universally neglected.

Assignments seem to have been given considerable attention and while

there has been more planning than execution, this method is effectively and universally used. To some extent, training reports have been required of the men assigned, asking them to report on what they learned, this method seems to be more effective than the more common one of getting a report from the men under whom they worked. One District gives special training to students.

Correspondence training has been very highly developed in three Districts and applied to practically the entire field personnel, while in three other Districts it is not used except for the all-Service courses. Not contemplated in the program, there has developed considerable individual training on the ground through the assignment of special men to that work.

While this training has fallen far short of the program set up, it has cost probably \$150,000 annually. What we have received for this money we know little about, although it is the universal belief that it is worth the price when converted into increased action on the job. As yet no District has devised a method for checking results.

GROUP TRAINING						INDIVIDUAL		
Guards	Beginners	Advanced	Special	Co-oper- ators		Inspection Contacts	Assign- ments	Special
D-1	Yes	Yes	x	Yes	x	40%	Yes Medium	Some
D-2	x	Yes	x	Yes	Some	Some	Yes High	Yes High
D-3	Some	Yes	Yes	Yes	x	Some	Yes High	Yes
D-4	Yes	x	Yes	Yes	x	Quite a Lot	Yes High	Yes
D-5	80%	Yes	Yes	Yes	x	Some	Def. pro- gram	Yes
D-6	Yes	x	x	x	Some	Some	Yes Medium	Some
D-7	2 or 3 da.	0	0	Yes	Yes	Def. Plan	Yes High	Yes High
D-8	50%	x	x	x	x	Some	Few	Some
D-9	Yes	Yes	x	x	x	Some	Yes	Yes

CONFERENCES						CORRESPONDENCE			
Supervisors	Rangers	Deputies	Special	Clerks		Work Covered	Required	Elective	No. En- rolled
D-1	Yes	Yes	Yes	x	x	All Lines	Part	Part	Large %
D-2	2	Yes	x	x	x	All Lines	Part	Part	Large %
D-3	Yes	Yes	x	x	Yes	All Lines	Part	Part	Large %
D-4	Yes	Yes	x	x	x	All Lines	Part	Part	Large %
D-5	x	Yes	Yes	Yes	x	x	x	x	x
D-6	2		x	x	x	x	x	x	x
D-7	2	1	x	x	x	x	x	x	x
D-8	Entire personnel every two years. Some from other Districts.								
D-9	None as yet.					Same as District 2			

	Other Training	Measure of Results
D-1	x	Inspection
D-2	x	Inspection
D-3	x	Inspection
D-4	x	Inspection
D-5	x	Inspection
D-6	x	Inspection
D-7	Studies	Inspection
D-8	x	Inspection
D-9	x	Inspection

PART II.

Topic 5.

Four years of progress since the Denver meeting show us far short of the five-year objective set up by that conference—the training of Forest forces in the all-around management of National Forest units. Training effort has been pretty generally concentrated on fire guards; to a lesser extent on probationers and rangers, and even less on supervisors. This, notwithstanding the emphasis that was put on the importance of training supervisors and assistant supervisors in the Denver program.

Practically complete training provision has been made for fire guards, but a very great deal remains to be done for probationers and rangers, and the job of supervisor training has hardly been well started.

Without detracting at all from the priority previously accorded to supervisor training, the feeling is growing—and this is in line with thought in the business world—that the emphasis should be spread to cover the training of District office and Washington executives and staffmen.

Topic 6.

Of the five forms or methods of training outlined at Denver, group training and correspondence courses have been most used—organized individual training and the others not so much.

Topic 7.

For the past eight years and more, the Districts have been experimenting and attempting to meet their needs with what appeared to each District to be the methods and programs best suited to these varying needs within financial and personnel limitations.

Out of this experience it has become apparent that:

- (1) Impetus and cohesion are needed for a real Service training effort. This should, of course, take into account peculiar needs and problems of the different Districts to the extent that such really exist.
- (2) Financial recognition—Definite allowance in the District budgets to provide for a training program so that it will not be crowded aside in favor of expenditures that may seem more important from the standpoint of the day to day job.
- (3) The biggest promise of results is from “training on the job.” This needs more emphasis as a method than group training projects such as conferences, camps and schools.
- (4) Since all administrative men organize, inspect, supervise and manage other men; and contact the public, it follows that substantial part of our effort should be toward training in these lines.

Topic 8.

The kinds of training in which the Service is interested are three:

- (1) Training in their probational period of that large group of appointees which is inducted into the Service each year.
- (2) Training for their present jobs of Washington and District

office staffmen, supervisors, Forest staffmen, clerks, rangers and guards.

- (3) Training for advancement—Assistant District Foresters for District Forester and Washington staff jobs;
Supervisors for more important Forest and District office staff jobs;
Assistant supervisors and other Forest staffmen for supervisory;
Clerks for executive assistant jobs;
District rangers for assistant supervisorships, and other Forest staff jobs;
Assistant rangers, junior foresters and range examiners for district ranger jobs.

Topic 9. Probationer Training—By group method in training camps and by training assignments.

Training camps for probationers have been discussed and policies agreed upon in two previous meetings. The additional element of training assignments will be discussed later in this report.

Topic 10. Training for the Job.

- (1) Training for the job will presuppose that the job has been analyzed, satisfactory standards established, and that the man's performance has been checked against these standards; deficiencies in performance show specifically where training is needed. In this manner training programs will be tied directly to performance and standards.
- (2) Washington and District office executives and staffs:
 - (a) Most needed is instruction in technique of training others, especially in inspectional contacts.
 - (b) Personnel Management.
 - (c) An analysis of Assistant District Forester and other staff jobs.

Methods:—Discussion courses and individual coaching by training specialists from either within or without the Service. These men need to be taught on the job, how to train field men on the job.

- (3) Supervisors and Assistant Supervisors:
 - (a) On the job training by inspectors to correct deficiencies in practice.
 - (b) Special instruction in training men.
 - (c) Instruction in personnel management.

Methods:—Group conferences—directed to specific purposes to be held only when or where there is something to be put over. Recommend job analysis meetings directed by State Boards for Vocational Education (Smith-Hughes Act men). Training assignments. Temporary transfers. Provide for an average of one meeting per District every two years.

Cost:—Since the allotment of each Forest is based on the actual needs for work on the Forest, any additional expense should be provided separately. The cost per man (outside Salaries) is estimated at \$75.00.

- (4) Forest Staffmen:
Participation in above conferences and individual training on job by study courses and inspectional contacts.
- (5) Clerks:
Training assignments under qualified executive assistants or first clerks. Study and commercial correspondence courses. The study of accounting should be especially stressed.
- (6) Rangers:
Training on the job by inspectional contacts, group meetings and camps. Recommend job analysis meetings under direction of State Vocational Boards. Training should deal with personnel management and also should be designed to correct defects in the work of the individual.
Cost:—A training camp program for rangers should provide training each year for 25 % of the whole ranger force including probationers. The estimated cost per man is \$130.00 exclusive of salaries.
- (7) Guards:
Group training for three days is now standard practice. No increase is recommended. This should be supplemented by planned training on the job. The cost exclusive of wages is about \$2.00 per day per man trained, but since this is taken care of in fire allotments, it need not be considered here.

Topic 11. Training for Advancement.

(1) While proficiency in the job at hand is without doubt the best preparation for the next job, nevertheless, some conscious effort should be made to prepare men for the peculiar demands of the job for which they have a reasonable chance of being selected. Since more candidates must necessarily be trained than there are jobs to fill, training should not be of such a nature as to single a man out as a shining mark with resultant loss of morale in case of failure to be selected.

The greatest need of men as they advance is broader background and actual experience in more phases of the work in which they are expected to take a more important directional part.

The foregoing indicates special training assignments, transfers between units or activities, and participation in appropriate study and discussion courses. Special studies are needed in organization, personnel and technique of analyzing and handling administrative problems. This might be done through the case method used by the Harvard School of Business Administration.

(2) Assistant District Foresters for District Forester and Washington Office jobs.

Training outlined in paragraphs under (1).

Desirable for assignments or details to Washington staff duty to precede appointments as District Forester. The Forester should make effective a program for such assignments or details.

Assignments to two or more different offices as Assistant District Forester are important.

(3) Supervisors for more important Forests and District Office

staff work.

Training as outlined under (1) above.

Practices suggested as desirable are:

Attendance at conferences of higher administrative groups.

Transfers to Forests offering varied experience.

Details to District Office.

Special jobs involving regional problems and contacts.

District Foresters should feel free to consider eligibles from other Districts in filling supervisory vacancies.

(4) Assistant Supervisors and other staffmen for Supervisorships.

Training as outlined under (1).

Definite work program for Deputies to insure broad experience in supervisory functions and correct present tendency to use them on special projects.

With the job should be given a feeling of responsibility.

Participation in Supervisor group training and conferences.

Special group training—field and conference.

(5) Clerks for Executive Assistant jobs.

Training on job, but on specially selected Forests. A production training job in which the incumbent earns his way and the instructor receives special recognition as to salary grade. Occasional group conferences are desirable.

(6) District Rangers for Assistant Supervisorship and other staff jobs.

The experience secured by service as a District Ranger is considered necessary training for the job of Assistant Supervisor.

Training as outlined under (1).

Special training in technique through assignment to project work.

(7) Assistant Rangers for District Ranger jobs.

Training assignments of one year to selected one and a half man Districts in charge of District Ranger who has been trained as instructor. Positions should be rated as about 50 % production and 50 % pure training.

Cost:—If the District Ranger load is based on standard requirements for trained men, it follows that new men must be trained to standard performance or the load will not be carried—a new untrained man cannot carry it. The average turn-over is around 10 % if the 50 % production estimate above is correct, it means that 5 % should be added to the Ranger load in each District to cover the production loss due to turn-over.

Topic 12.

The training provided for by this program if systematically carried out involves a cost of roughly \$297,000. This total includes items as follows: Supervisor meetings \$9,000; training camps \$30,000; Assistant Ranger training assignments \$88,000 and guard camps \$170,000. The last item is already provided for out of fire funds. Supervisor meetings of various sorts have been customary in all Districts in years past, and training camps have been held in several Districts. All this without special recognition in the apportioning of funds between Districts.

The training of District Rangers for replacement purposes made necessary by annual turn-over has not been taken into account in deter-

mining the work of load of Ranger Districts. This should be taken into account in future and funds allowed to each District to provide for the following additional Rangers:

D-1	6.5	Rangers at	\$2300	\$14,950
D-2	5.6	"	"	12,880
D-3	4.45	"	"	10,235
D-4	6.7	"	"	15,410
D-5	5.95	"	"	13,685
D-6	6.35	"	"	14,605
D-7	2.55	"	"	5,865
<hr/>				
Totals	38.10			\$87,630

(Statement added by note of meeting: When District Foresters act on allotments they should add training assignment needs to total job loads of regions and consider the extent to which additional amounts for training positions should be applied to the equalization between regions.)

Topic 13.

In considering this expense it must be remembered that it is the function of systematic training to reduce costs, not to increase them. The training work must be done; if not done systematically, it will still be done. When training expense is lost in other activities it is nevertheless there. The purpose of segregating it is to control it. The purpose of systematizing the training process is to lessen it. The need for training increases in proportion to the weight of the load.

An outstanding example of the recognition of the above principles is the action of one District which when short-handed, diverted the necessary funds to the introduction of a rather extensive training program, realizing that only through increasing efficiency of personnel could the excessive load be carried.

If expense is to be controlled it must be known. Each District should therefore use the cost accounting system to segregate all direct charges against the training program.

The Forester and District Forester should provide the necessary overhead to insure the impetus and cohesion referred to in topic 7.

Topic 14.

It is suggested that one of the four following subjects be selected for a discussion course next winter:

- (1) Training methods with particular reference to training on the job by Washington and District staff officers—to be featured by group discussion meetings periodically during the course in Washington and District Offices.
- (2) A discussion correlating the principles discussed in the three preceding courses. (Cost accounting, executive management and personnel management.
- (3) The principles of organization and their application to the Forest Service job.
- (4) Amplification of last year's personnel management course with emphasis on methods rather than principles.

Comments:

I get the impression from the report that possibly the aim to spread specialized training at one time over such a large number of classes of positions has resulted in its not being as effective as it should be. Or is it that policies are established, as at the Denver conference, but effectiveness in following them is not as great as it should be due to failure to convert the policies into action?

The report is a splendid program of what should be done. Additional funds are needed for much of it. As was stated during the meeting a strenuous effort will be made to obtain the needed appropriation. In the meantime, however, I would like to see applied to the needed training of other position, the same energies and determination which have made the guard training camps and the ranger group training practices so signally successful. Consideration of our financial condition leads me to believe that the will to do is the principal reserve which will have to be called upon again for any considerable extension of the training program in the immediate future. Training assignment, interposition transfers and details, conferences and similar steps are within our power at present and need little more than well laid plans and principally action to make them effective. I think the report is too pessimistic in tone as to the extent to which this practice is already in effect although no doubt it can be extended.

The report states that "impetus and cohesion are needed for a real service training effort." It also recommends the continuance of the discussion courses. In line with these recommendations Mr. Kep-linger is being transferred to the Washington office. His will be a large field however and, as capable in it as he is, the training work must still remain, as the District Foresters would wish it to be, an important District responsibility.

The third paragraph under topic 13 will be covered in a special letter from Accounts.

There should probably be added to the record the later agreement of the conference to show the job load for training in parenthesis in one of the extra columns provided on the "Summary Sheet" of "Index Weights and Plus and Minus Differences." It will thus not be lost sight of in considering the actual Regional load, but, for purposes of use in equalization between Districts this column was to be ignored. This policy has been followed in making the allotments for the next fiscal year.

R. Y. S.

REPORT OF INSPECTION COMMITTEE

A glance at the Manual, at the reports of the Mather Field Conference in 1921, the Cooley Conference in 1922, and the Denver Conference in 1925, shows that at least once and in some cases oftener, Inspection has been defined, its purposes listed and the following phases stressed: Training; strengthening morale, more correlation by use of general inspection and otherwise; checking of performance against standards, policies and plans; fixing responsibility with relation to the inspectee and securing its accep-

tance by him; use of outlines; and dating back nine years, need for more inspection, for diary analysis, and for inspection to be on the watch for and eliminate what was termed our outstanding fault, i. e., waste of time. Of all these phases the last three seem to have been the most thoroughly applied.

The first three phases, i. e., training, morale, and correlation which includes general inspection, deal with sensitive, alert, reasoning personalities, forces which expand or contract according to the way handled. The success with which inspection has dealt with these three has not been so apparent nor is it so easily measured.

Topic 8. Training.

During an inspection the inspector is presumably imparting something of value to the inspectee. This process should not be left to chance but should be given more emphasis. During this process the inspector sizes up the inspectee and should determine his deficiencies or needs. Individual or group training needs should be specifically noted by inspectors and assembled so that an adequate program of training can be arranged and carried out. The inspectors should effectively organize not only the information to be imparted but their method of imparting it. The Committee recommends that each District develop this training phase of inspection.

Topic 9. Morale.

Thoroughgoing observations and fact finding for comparison with best approved practices do not injure morale but on the contrary build it up. Frank discussion of conditions between inspector and inspectee should continue to be the rule.

Morale is commonly thought of in connection with esprit de corps but it involves a lot more. Incentive and enthusiasm materially expand a man's accomplishments. Loss of interest or lack of confidence in work he is required to do shrink them correspondingly. The expanding process is going on somewhere all the time. So is the shrinking process. The inspector must aim to eliminate the shrinking process and increase the other. The state of mind of the personnel is extremely important and indicative of the strength of the Service.

The Committee commends to the attention of every inspecting officer the following extract from the January 1930, issue of the Paper Trade Journal:

"A fine morale can only be built up by personal contacts, by the human voice and the human smile, by getting into the hearts and souls of the people the thought that they are a part of the business and proud of it. All sorts of relationships are possible where there is an assembly of human beings working together during the major portion of their waking hours, and the executive who does not appreciate that there is a direct relation between this morale and productivity fails to meet the first requirement of leadership."

Topic 10. Correlation.

All Washington and District Inspectors should consider and be actively interested in activities of branches other than their own. At Mather Field in 1921 and again at Denver in 1925, the need for more correlation

and for more general inspection was stressed. At Denver the Forester cited as of special importance "The correlation of inspection to maintain balance between activities and to keep priorities in line" stating "This comes home to the Washington staff as much as to anybody. It indicates the desirability of as much general inspection as practicable, etc."

The Committee feels that this statement still holds, that more correlation is needed between Assistant Foresters. The more the organization grows, the more difficult does correlation become, but the need also increases. It is realized that the Assistant Foresters must be specialists in their lines. They have large fields to cover and they must remain at the top of their professional work. They cannot become general all-around inspectors. Nevertheless, positive interest and active inquiry by them in the work of other Branches is highly desirable and the Forester may be able to develop other means for further correlation between Branches. More joint inspection trips by representatives of different Branches will help. Perhaps it would make the correlation of Washington inspection plans easier if the Districts limited their annual inspection suggestions to really urgent needs for advice and assistance.

As for the Districts, they indorsed general inspection, but outside of Operation, the practice is not widespread. General inspection as here defined does not contemplate highly expert work in other Branch fields. It does contemplate a working knowledge of other Branch activities. The practice of general inspection has been limited in some instances by lack of supervisor experience among inspectors. It has also been limited somewhat by the technical inspection demands of particular Branches. General inspection cannot supplant Branch inspection without loss of technical progress and development. It should, however, supplement Branch inspection, particularly in connection with follow-up observations. Inspectors should be encouraged to extend their thorough-going inspection work, not only their casual observations, over a wider field. Besides the correlating and broadening influence of such a practice, savings of travel and time on the part of inspectors and inspectees should thereby result.

The serious attempt now being made to secure better financial correlation between Districts emphasizes the responsibility upon the several Districts for fully observing in their use of funds the principles governing allotments, and for the exercise of extreme care to avoid excessively high or unreasonably low standards. As correlators, Washington inspectors should pay particular attention to use of funds, standards of construction, maintenance and of work in general, and to business efficiency in District administration. Important differences as between Districts should be reported and appropriate action taken to bring into harmony with Service standards and policies any Districts which are found out of line, due consideration being given of course, to varying natural conditions as between Districts. Like responsibility for correlation between units of a particular District should receive renewed emphasis as a feature of District inspection.

Topic 11. Methods of Inspectors.

Most District inspectors continue to inspect the Forest and the ranger rather than the supervisor. Sometimes the supervisor is not even present. If present, he sometimes acts as a guide and defender of defective work

when it would be infinitely better to act as inspector with a view to indicating corrective action. The District inspector should observe closely the supervisor's inspection and training methods and help him to improve them. The more effective the supervisor's inspection and training work can be made, the less becomes the need for District inspection and training. The inspector should also closely observe conditions on the ground, quality of resource, management, progress made, etc., and supplement as he deems necessary the supervisor's report, submitting the latter along with his own to the District Forester. He should, however, not lose sight of the fact that he is there primarily to see how the supervisor is functioning as a supervisory officer. Where the assistant supervisor represents the supervisor on part of the trip, the same practice can be followed in modified form. The Committee recommends that the District direct their inspection more generally to seeing that supervisors do their own inspection thoroughly and act positively on their findings. It is important that we establish correct functional relationships all along the line.

Topic 12. Amount, Frequency and Record of Inspection and Inspection Control.

Inspection should also be a deliberate check of the adequacy and application of job analyses, resource plans and general plans. Accomplishment and other records should be checked. Recommendations and instructions of previous inspectors should be followed up and progress reported. To further guard against omission of essentials, each inspector should use a reminder list currently revised to meet changing conditions and supplemented by specific items to be covered on individual trips.

The amount and frequency of inspection will always vary by forests and ranger districts. With the increasing demands of National Forest work on the time of forest officers, it is important that inspection be controlled by the needs therefor. Among the factors influencing amount and frequency are:

- (1) Volume of business.
- (2) Personnel considerations—new or weak men requiring above average attention or training.
- (3) General training needs.
- (4) Relation between actual and permissible resource use, especially important where over-use is likely to result in damage.
- (5) Critical public relations situations existing or impending.

There is an indicated need for a more consistent relationship between amount and frequency of inspection and the foregoing factors.

Inspection consumes the time not only of the inspector but of the inspectee. To overdo inspection is a wasteful process and disrupts the work required to be done.

Only through the assembly each year of inspection statistics in such a way as to indicate by forests, ranger districts and projects, the amount of inspection given by Offices and individuals distributed among such items as Supervisor Headquarters, Ranger Headquarters, actual field inspection, travel off forest, can a real analyses of the inspection problem be made. Close analyses of such classified statistics will point the way to inspection reforms. Accordingly, the committee recommends the upkeep and use of

classified records not only by the Districts but by supervisors.

Satisfactory frequency standards for inspection must await the outcome of the foregoing analyses. Pending their availability, the Committee recommends as highly desirable (1) a general inspection of every supervisor by the District office once in three years; (2) District men to contact every ranger and yearlong employee, preferably in the field, at least once during the 3-year period; (3) a thoroughgoing inspection of every district ranger or other yearlong employee of the forest by the supervisor or his qualified assistant annually—this inspection is largely a field activity and to accomplish best results, the work in each District should be covered sufficiently to make possible the preparation of memoranda covering all phases of the work of the officer concerned; (4) an administrative audit of each supervisor's office every two to three years.

The conditions found as a result of supervisor and District or Washington Office inspection should be made a matter of record. Inspection reports should do three things:

1. Show accomplishment and failure, giving credit for good work as well as disclosing poor work.
2. State clearly the inspecting officers opinion as to the underlying causes of poor work, such as inadequate plans, failure to follow plans, lack of initiative, poor judgment, lack of leadership, inability to handle men, etc.
3. State exactly what specific remedial courses need to be followed.

Unless inspection analyses causes of poor work or lack of accomplishment and suggests a remedy, it falls far short of its object. For the benefit of others, notable methods of accomplishing good work should be cited.

Emphasis on the personnel and follow-up side of inspection should not, however, be allowed to disturb the accepted theory that inspection should be helpful and affords an opportunity for common attack on a common administrative or resource management problem.

Topic 13. Follow-up.

As an aid to follow-up inspection, each inspector should list concisely the important recommendations. The supervisor's system for insuring adequate follow-up of local inspections should receive particular attention.

Topic 14. Inspection and Accomplishment Records in Relation to Promotions.

Inspection is valuable in sizing up men and the cumulative records of inspection should be fully consulted when considering men for promotion. This will avoid over-emphasis of recent impressions or spectacular performance. Inspection records will become effective for this purpose only as inspectors go more generally into personnel inspection and size up the man's effectiveness in various activities.

Care must be taken, however, lest insistence on recent inspection of men as a prerequisite of favorable consideration for promotion is carried to the point of directing inspection to the men least in need of inspection (the active promotion candidates) at the expense of inspection of the men most in need of attention (the new and less experienced or the less efficient

members.)

It is not believed necessary to set up uniform procedural rules. Sustained emphasis of the fact that promotions should go to the most deserving gauged by actual accomplishments, should bring about the desired tie-in of promotions with progress records of all kinds.

Comment:

Just as there is urgent need for additional funds to meet reasonable objectives in fire and other activities, so is there need, as expressed by the fire, improvement, and other committee reports, for assurance that actual expenditures of time and money which are already available are uniformly held to a high level of productiveness. As a matter of inter-Regional fairness; and in order that we may be sure our organization is functioning efficiently and economically throughout, our standards of performance, even of the ordinary and recurrent tasks which are in many if not most cases the backbone of our work, should be of the highest.

Selection of personnel, training, and planning are among the important means of attaining the desired end. In addition fact finding inspection, followed by appropriate action, is indispensable. Progress in the use of inspection methods should keep pace with other developments. Such steps as will keep a live interest in and use of these methods are accordingly in place. Continuance of the practice of requiring inspection reports to accompany recommendations to the District Forester for promotion, bearing in mind that the Meeting favored the annual inspection of each ranger district; review by District officers in the field or in the District offices of more of the inspection reports made by Supervisors, and otherwise focusing attention on this very important administrative tool should be considered. Officers in the various Branches state that in places this class of work needs more attention.

The report is approved. I hope it will become well known in the field and that the specific recommendations which are made in it will become established Service practice. I may add, however, that the report emphasizes that District Office inspection is primarily of the functioning of the supervisors. Similarly, Washington office inspection should deal primarily with the functioning of the District office, but must be devoted to illustrative samples of work in a District and the functioning of the organization in regard to those samples.

The report omits mention of one of the chief results of inspection under the Forest Service organization. Our inspectors are also administrators. In their inspection work, they obtain personal familiarity with local problems. This assures continuous review of policies to make them fit actual conditions on the ground. It also gives the inspectee assurance against lack of understanding, by his superior officers, of the conditions surrounding his work, and safeguards him against misrepresentations of fact. Each inspector should be a better administrator after each completed inspection and the Service should be strengthened by the knowledge held by its personnel in common.

R. Y. S.

THE USE OF RADIO COMMUNICATIONS IN THE NATIONAL FORESTS

D. L. Beatty

The proposed use of radio communication in the National Forests presents a somewhat complex and difficult problem.

I have listed the more important limitations and difficulties:

1. The power supply available for portable transmitting equipment is limited to a low value because the weight and bulk of a power unit must be limited to a load which may be transported with ease by a pack animal and not too heavy to move short distances by man power. Also, source of power seems to be confined to electric batteries or man driven generators. An improvement crew cannot be burdened with gasoline, gas engines, etc., except, possibly, in unusual cases.

2. Inexperienced, so far as radio is concerned, temporary men with little or no knowledge of code, must serve as operators.

3. Inefficient antenna system due to space limitation in heavy timber.

4. Rough usage of equipment. Sets must be designed for pack animal transportation and radio tubes must be equally rugged. Receiver tubes are still a problem. A new Westinghouse tube not available commercially at present will, however, probably prove satisfactory. Meters are delicate and, with the exception of a volt meter to test filament current and batteries, should not be used.

Finding a really workable substitute for a transmitting antenna meter was a serious problem, but I believe that particular question has been answered satisfactorily. The scheme I refer to is incorporated in the portable set I have with me.

5. So called shadow effect of mountains.

6. Losses due to green timber. There is a definite loss in the output of a transmitter located in green timber, due probably to absorption.

The last two captions need some explanation.

When the present radio project was initiated a number of men prominent in the radio field were consulted. It was the opinion of the majority that absorption of radio energy by green timber would prohibit the use of short wave low power radio transmission and that even if a transmitting antenna were placed in the open the shadow effect of mountains would be almost as bad. Some of these men laughed at the whole idea, said it was impossible considering our power limitations.

Dr. Dillinger, Chief of the Radio Division, Bureau of Standards, stated that the idea was fundamentally sound. He added, however, that much research work would be necessary before considering the design of equipment as this field is new and presents unusual problems due to power limitations, rough topography and heavy green timber. He believed the rough topography would cause "shadows" resulting in many dead spots and that a heavy loss of energy could be expected in green timber, especially when an antenna system is closely surrounded by green trees. He remarked, however, that we might find that the losses due to absorption in green timber are not so heavy as generally accepted theory would indicate.

To do this check-up work it was necessary to build special equipment which was somewhat of a job in itself.

It has been found possible to measure fairly closely the losses due to placing a transmitting antenna in green timber. It is about 30 % but at a distance of 18 miles is not noticeable to the ear.

I will attempt to explain briefly the theory of shadow effects.

The ground wave from a transmitter dies out quickly and a few miles away the energy conveyed is slight, so the sky wave must be used for the transmission of our signal.

If we transmitted a signal from one mountain peak to another with a separation of 10 miles there would be no shadow effect because the wave could go directly to the receiver.

When mountains intervene, however, the waves starting toward the receiver are cut off and the waves must be used which are projected more or less vertically to the reflecting medium some 100 miles above the earth, returning from that point directly to the receiver, or being reflected several times between the earth and the reflecting medium in the sky before reaching the receiver.

We find then in radio transmission in rough topography that a wave must travel around 200 miles to reach our receiver 10 miles away, or several more hundred miles if there are a number of reflections before the receiver is reached. At greater distances than we have been considering the curvature of the earth has the same effect as the mountain side and a skip distance effect results.

Contrary to theory I have found that a 55 meter signal gets across the hills fine at midday and 70 meters with fairly good volume, while 90 meter "is not so hot." But 55 meters cannot be used at night. It has "skipped" the comparatively short distance in which we work.

Using different wavelengths for day and night transmission is a simple matter when transmitting equipment is installed in a permanent location but is quite difficult with portable outfits operated by inexperienced men.

Perhaps a different antenna system giving a more desirable angle of radiation may help the 90 meter signal at midday.

It can be seen that considerable work will be necessary along this line.

It is planned to continue the check-up next season on the Columbia Forest in District Six. A radio phone set will be located at the Dispatcher's headquarters and several portable sets will be placed with crews.

We hope to determine:

1. Whether or not satisfactory communication is possible using portable field code sets with a central phone station.
2. The output power required for a phone station in rough topography.

Of course, with any reasonable power the phone transmitter will be much more effective if placed on a lookout point than in a valley.

3. Design of a central station phone transmitter desirable for our use. Operation must be simple with minimum adjustments.

The general experimental check-up should continue during the season. The more important things for immediate investigation are:

- a. A more effective antenna system for portable equipment.

b. Check up the need for better frequency control of portable sets, investigating use of crystal control either directly or in a monitor.

c. How much trouble develops from moisture, due to condensation, in field sets.

d. Improvement in design of field apparatus.

There is also the question: Can a portable phone transmitter be developed for short distance work (about 8 or 10 miles) which will operate satisfactorily with the power available?

I have not had much luck in getting equipment, suitable for our use, designed by commercial concerns.

Dr. Taylor, Chief of the Radio Section, Naval Research Laboratory, made the following comment after looking at the portable set I have with me:

"You are doing the right thing in designing and building your own equipment. You cannot hire a commercial concern to do this work for you successfully because they cannot seem to get a clear idea of your problem.

"When you have developed satisfactory apparatus you can engage the commercial concern to build the quantity you need."

Cost is also an important thing to consider. I am creditably informed that the design and construction of single compact portable set would cost \$3500 or more.

In connection with costs you will be interested in some figures concerning our present experimental portable.

A member of the Aircraft Section in the Naval Laboratory who is well qualified to make an estimate told me such a set manufactured in the small quantity we need would cost between \$400 and \$500 each. We have just accepted a bid, submitted by a Spokane firm, of \$110.35 without cases or antenna equipment. These items will add about \$20.

I have had the set checked up in the Naval Research Laboratory and it is OK. I met with an unusually fine cooperative spirit there. Dr. Taylor and Dr. Wheeler exhibited a keen personal interest in our problem and Dr. Taylor spent considerable time going over the entire matter with me. After conducting me through the various sections he kindly permitted me to visit them whenever I wished to. All of the men seemed eager to help and many of them hunted me up to offer suggestions which might prove valuable in the future.

With reference to the central station phone equipment it is of interest that the Northern Electric Company of Seattle has agreed to furnish a suitable transmitter and receiver for the season's use without charge. We will have to purchase tubes. Their reimbursement will be in such information of value that we may gather.

I have some figures on weights and battery life:

Portable set without case 11-1/4 lbs.; set and case with phones, key, and antenna wire, about 27 lbs.

Battery weight about 30 lbs. will give season's use for receiver and about 25 hours continuous service for transmitter. The weight of the transmitter battery unit is 21 lbs. Works out about a pound of battery for each hour of use. It may prove desirable to use a different battery com-

bination providing either longer or shorter operating life.

The transmitting battery unit cost is \$8.42 or 34c per hour.

The receiver battery cost is \$2.82.

My personal slant at the whole proposition is this: If we feel that radio communication is an important factor in the solution of the fire problem, ways and means can be found to use it however difficult it may appear from some angles.

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